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DOT HS 807 439

April 1989

Final Report

Final Report of 270° Contoured Moving Barrier Impact into a 1985 Chrysler Lebaron 5-Door Hatchback in Support of Crash III Damage Algorithm Reformation

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Technical Report Documentation Page

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16. Abstract <p>Four 270° contoured moving barrier impact tests were conducted for research and development in support of the CRASH III damage algorithm reformulation. These tests were conducted on a 1985 Chrysler LeBaron 5-door hatchback, VIN 1C3BH4809FN101781, at the Transportation Research Center of Ohio. The following four tests were conducted on one vehicle:</p>																														
<table><thead><tr><th rowspan="2">TEST NO.</th><th rowspan="2">DATE</th><th rowspan="2">TIME</th><th colspan="2">AVERAGE CUMULATIVE</th></tr><tr><th>SPEED (mph)</th><th>CRUSH</th></tr></thead><tbody><tr><td>890302-1</td><td>3/2/89</td><td>1115</td><td>19.9</td><td>5.8</td></tr><tr><td>890302-2</td><td>3/2/89</td><td>1315</td><td>30.0</td><td>10.1</td></tr><tr><td>890302-3</td><td>3/2/89</td><td>1420</td><td>29.8</td><td>13.3</td></tr><tr><td>890302-4</td><td>3/2/89</td><td>1515</td><td>39.8</td><td>18.7</td></tr></tbody></table>				TEST NO.	DATE	TIME	AVERAGE CUMULATIVE		SPEED (mph)	CRUSH	890302-1	3/2/89	1115	19.9	5.8	890302-2	3/2/89	1315	30.0	10.1	890302-3	3/2/89	1420	29.8	13.3	890302-4	3/2/89	1515	39.8	18.7
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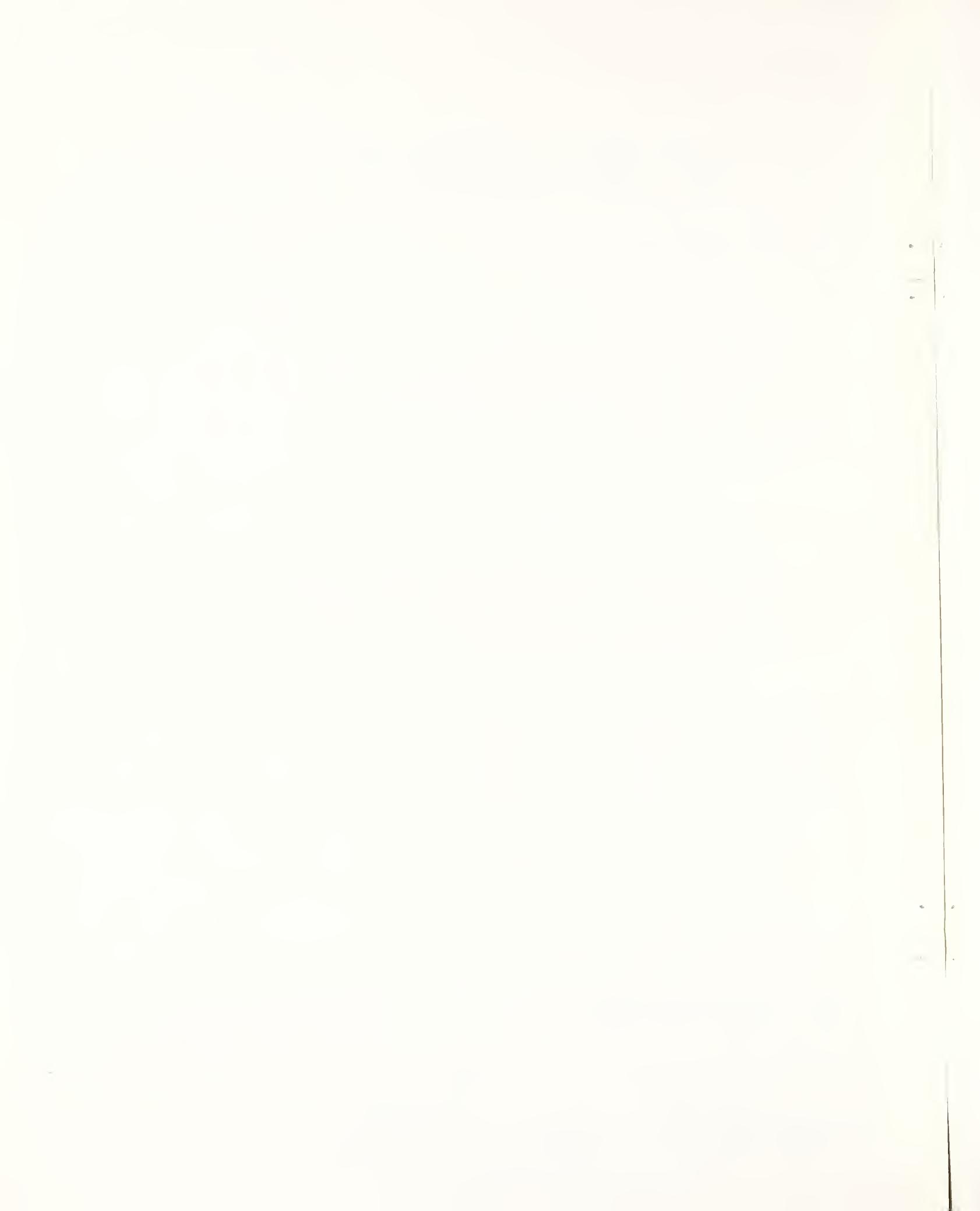
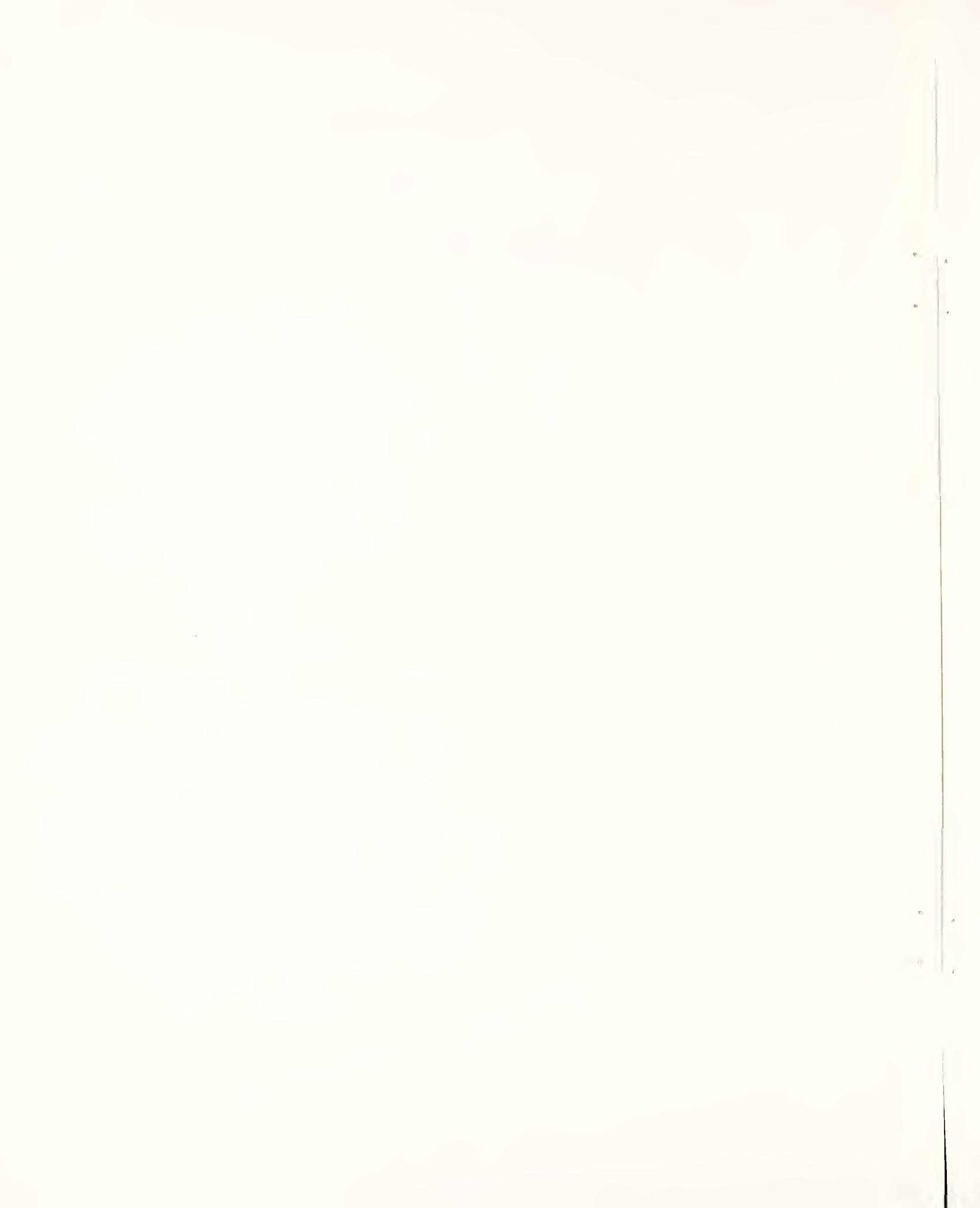


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SECTION 1.0
PURPOSE AND TEST SUMMARY

The purpose of the four 270° contoured moving barrier impact tests was for research and development in support of the CRASH III damage algorithm reformulation.

The 1985 Chrysler LeBaron was equipped with a 2.2 liter, 4-cylinder, transverse, gas engine with a 3-speed automatic transmission. The intended total test weight of the vehicle was 2620 pounds. The actual weight was 2620 pounds.

The contoured moving barrier actual weight was 2652 pounds, frontal width was 62.5 inches, hood height was 30.0 inches, bumper width was 6.0 inches, and center line bumper height to ground was 17 inches. The contoured moving barrier was intended to impact the driver's side of the vehicle at 270°. The leading edge of the contact was to be 25.6 inches forward of the vehicle's center of gravity.

The crash event was recorded by three (3) high-speed cameras.

DEFINITION OF MEASUREMENTS

C1, C2, C3, C4, C5, C6 = crush at 6 points for major (bumper height) penetration.

S1, S2, S3, S4, S5, S6 = crush at 6 points for stiffer member (sill height) penetration.

F = free space distance, measured on the undeformed side of the car, between the surface at major penetration (bumper height) and minor penetration (sill height) locations.

X1, X2 = distances between points C1 and C6, respectively and the vertical plane passing through points at the extreme ends of the car which lay in the plane of the car side before deformation.

B1 = the offset of the trunk centerline from the original body center line.

B2 = the offset of the hood centerline from the original body center line.

If a door hinge or latch or pillar did not fail then:

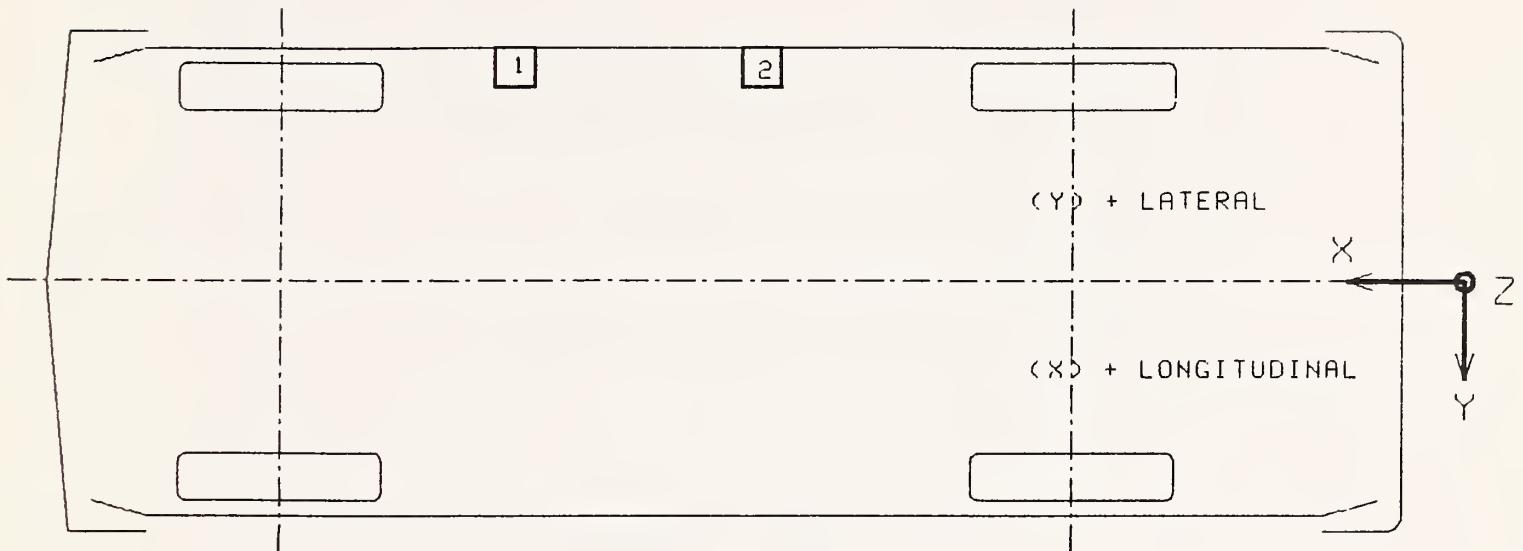
$$\text{Average Crush} = \text{Bumper Height Crush} + \frac{X_1 + X_2}{2}$$

If a door hinge or latch or pillar did fail then:

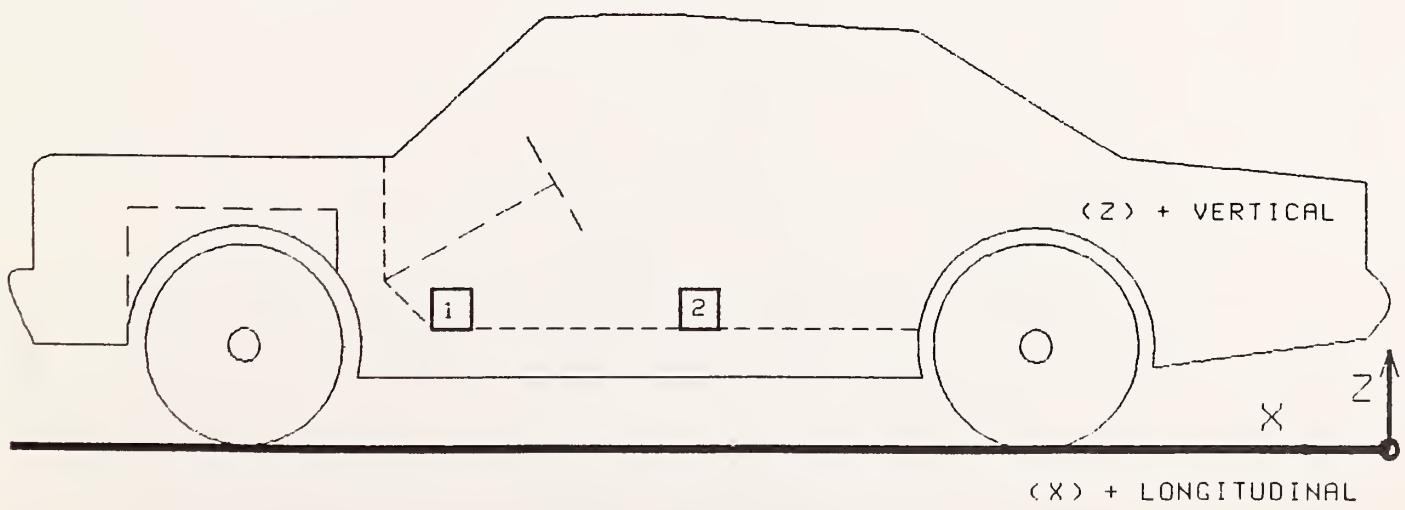
$$\text{Average Crush} = \text{Bumper Height Crush} + \frac{\text{Sill Height Crush as Corrected}}{2} + \frac{X_1 + X_2}{2}$$

Sill height crush as corrected = Sill Height Crush as measured free space.

VEHICLE ACCELEROMETER PLACEMENT

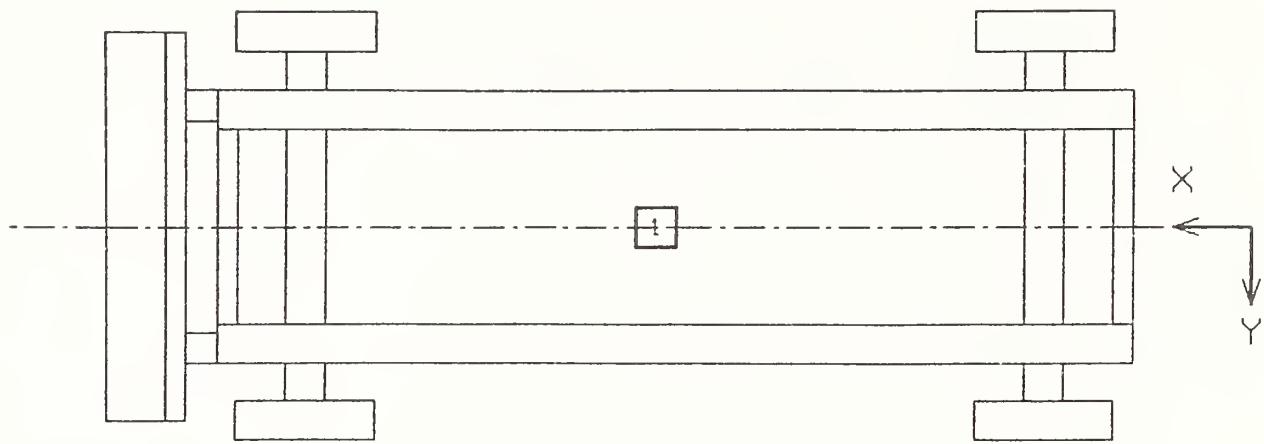


TOP VIEW

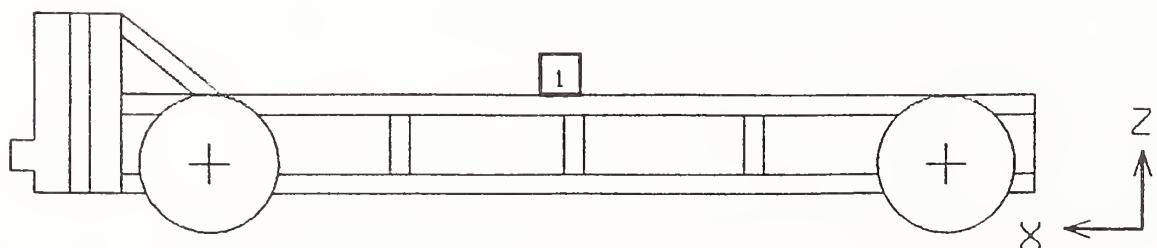


SIDE VIEW

MOVING BARRIER
ACCELEROMETER PLACEMENT



TOP VIEW



SIDE VIEW

SECTION 2.0
VEHICLE INFORMATION

TEST VEHICLE INFORMATION

VEHICLE MANUFACTURER: Chrysler Corporation VIN: 1C3BH4809FN101781
MAKE/MODEL: Chrysler LeBaron MODEL YEAR: 1985
BODY STYLE: 5-door hatchback COLOR: silver
ENGINE DATA: TYPE: transverse CYLINDERS: 4 DISPLACEMENT: 2.2 liter

X GAS, DIESEL, TURBOCHARGE

TRANSMISSION DATA: 3 SPEED, MANUAL, X AUTOMATIC, X FWD, RWD, 4WD
DATE VEHICLE RECEIVED: 2/23/89 ODOMETER READING: 7439

DEALER'S NAME AND ADDRESS: NA

ACCESSORIES:

POWER STEERING	Yes	AUTOMATIC TRANSMISSION	Yes
POWER BRAKES	Yes	AUTOMATIC SPEED CONTROL	Yes
POWER SEATS	No	TLITING STEERING WHEEL	Yes
POWER WINDOWS	No	TELESCOPING STEERING WHEEL	No
TINTED GLASS	Yes	AIR CONDITIONING	Yes
RADIO	No	ANTI-SKID BRAKE	No
CLOCK	No	REAR WINDOW DEFROSTER	Yes
OTHER	None		

DATA FROM CERTIFICATION LABEL ON LEFT DOOR FACE OR "B" POST:

VEHICLE MANUFACTURED BY: Chrysler Corporation

DATE OF MANUFACTURE: 11/84

GVWR: 3891 LBS.

GAWR: FRONT 2144 LBS.; REAR 1822 LBS.

TEST VEHICLE INFORMATION, CONT'D

WHEELBASE: 103.2

MAXIMUM WIDTH: 69.8

WEIGHT OF TEST VEHICLE WITH REQUIRED OCCUPANTS AND LUGGAGE:

RIGHT FRONT 783 LBS. RIGHT REAR 506 LBS.

LEFT FRONT 858 LBS. LEFT REAR 473 LBS.

TOTAL FRONT WEIGHT 1641 LBS. (62.6% OF TOTAL VEHICLE WEIGHT)

TOTAL REAR WEIGHT 979 LBS. (37.4% OF TOTAL VEHICLE WEIGHT)

TOTAL TEST WEIGHT 2620 LBS.

WEIGHT OF BALLAST SECURED IN VEHICLE TRUNK AREA: 0 LBS.

VEHICLE TIRE DATA:

TIRES ON VEHICLE (MFR. & LINE, SIZE): Goodyear Vector P185/75R14

RECOMMENDED COLD TIRE PRESSURE: FRONT: 29 psi; REAR: 32 psi

SIDEWALL PLY RATING: 1 ply

BIAS PLY, BELTED OR RADIAL? Radial

IS SPARE TIRE "SPACE SAVER"? No spare tire

IS SPARE TIRE STANDARD EQUIPMENT? NA

VEHICLE ATTITUDES:

DELIVERED: LF: 26.0; RF: 25.8; LR: 26.4; RR: 26.4

PRE-TEST: LF: 26.1; RF: 26.3; LR: 25.3; RR: 25.6

POST-TEST: LF: 25.4; RF: 26.2; LR: 25.0; RR: 25.4

ALL DISTANCE MEASUREMENTS ARE IN INCHES.

TEST ANOMALIES

Noise in the form of spikes was observed in the plots for the contact switches OTH1, OTH2, OTH3, OTH4. * The switches were used to record the time of vehicle contact with the moving barrier, as well as the time of vehicle separation from the barrier. The switches were damaged by the crush of the moving contoured barrier against the vehicle. The switches were replaced following each test which contained spikes. This is not the standard use of such switches.

*CONTACT SWITCH MNEMONICS:

OTH1 Barrier contact switch - Left
OTH2 Barrier contact switch - Center #1
OTH3 Barrier contact switch - Center #2
OTH4 Barrier contact switch - Right

TEST NO. 890302-1

The entire data was lost due to a fuse blow out in the moving barrier multiplex box. The data are the following:

BCGXG, Contoured moving barrier center of gravity X-axis accelerometer
BCGXV, Contoured moving barrier center of gravity X-axis velocity

OTH1 Barrier contact switch - left
OTH2 Barrier contact switch - Center #1
OTH3 Barrier contact switch - Center #2
OTH4 Barrier contact switch - Right

SECTION 3.0

TEST #890302-1 SUMMARY

TEST CONDITIONS:

TEST NUMBER: 890302-1

DATE OF TEST: 3/2/89

TIME OF TEST: 1115

AMBIENT TEMPERATURE AT IMPACT AREA: 40° F

SUBJECT VEHICLE DATA:

	<u>ACTUAL</u>	<u>INTENDED</u>
VEHICLE WEIGHT (lbs.)	2620	2620
VEHICLE ORIENTATION (deg.)	270	270
MOVING BARRIER VELOCITY (mph.)	19.9	19.9
BARRIER WEIGHT (lbs.)	2652	2652
MAXIMUM CUMULATIVE CRUSH BUMPER HEIGHT (in.)	7.9	
AVERAGE CUMULATIVE CRUSH = $\frac{C1+C6+C2+C3+C4+C5}{2}$ BUMPER HEIGHT (in.)	5.8	

TEST NUMBER 890302-1

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

No.	LOCATION	X*	Y*	Z*	POSITIVE	NEGATIVE
					DIRECTION	DIRECTION
1	SILL RIGHT FRONT LATERAL	107.8	-27.3	14.1	2.8	87.0
2	SILL RIGHT REAR LATERAL	94.8	-27.3	14.1	2.6	87.4

* ALL MEASUREMENTS OF ACCELEROMETER LOCATIONS ARE IN INCHES.

REFERENCE: X: FORWARD FROM REAR AXLE
Y: LEFTWARD FROM VEHICLE CENTERLINE
Z: UPWARD FROM GROUND LEVEL

TEST NUMBER 890302-1

BARRIER ACCELEROMETER LOCATIONS AND DATA SUMMARY

No.	LOCATION	X*	Y*	Z*	POSITIVE	NEGATIVE
					DIRECTION	DIRECTION
					MAX G MSEC	MAX G MSEC
1	BARRIER CG LONGITUDINAL	75.0	0.0	10.5	---	---

* ALL MEASUREMENTS OF ACCELEROMETER LOCATIONS ARE IN INCHES.

REFERENCE: X: + FORWARD FROM REAR BUMPER
Y: + LEFTWARD FROM VEHICLE CENTERLINE
Z: + UPWARD FROM GROUND LEVEL

Y See TEST ANOMALIES

TEST #890302-1

CONTACT SWITCH LOCATIONS AND DATA SUMMARY

LOCATION	SEPARATION TIME (MSEC)
BARRIER CONTACT SWITCH - LEFT	--- Y
BARRIER CONTACT SWITCH - CENTER #1	--- Y
BARRIER CONTACT SWITCH - CENTER #2	--- Y
BARRIER CONTACT SWITCH - RIGHT	--- Y

Y See TEST ANOMALIES

TEST #890302-1

National Accident Sampling System - Continuous Sampling Subsystem: Vehicle Data

FIELD MEASUREMENTS

Complete When Applicable

End Damage	Side Damage
Undeformed end width _____	Bowing: B1 _____ X1 _____ 0
Corner shift: A1 _____	B2 _____ X2 _____ 0
A2 _____	Bowing constant
End shift at frame (CDC) (check one)	$\frac{X_1 + X_2}{2} = 0$
<4 inches <u>X</u>	
≥4 inches _____	

NOTE: Measure C1 to C6 from Driver to Passenger side in Front or Rear impacts -
 Rear to Front in Side impacts.

Specific Impact Number	Plane* of C-Measurements	Direct Damage									±D
		Width** (CDC)	Max*** Crush	Field L**	C ₁	C ₂	C ₃	C ₄	C ₅	C ₆	
Bumper height as measured				0.0	6.1	6.5	7.6	7.9	0.0		
Bumper height as corrected				0.0	6.4	6.8	7.9	8.1	0.0		
Average Crush		98.2	0.0	6.4	6.8	7.9	8.1	0.0	-3.6		

Bumper height as corrected = Bumper height as measured - free space
 Free Space = -0.25

Average crush = Bumper height as corrected + $\frac{X_1 + X_2}{2}$

*Identify the plane at which the C-measurements are taken (e.g., at bumper, at sill, above sill, at beltline, etc.) or label adjustments (e.g., free space).

Free space value is defined as the distance between the baseline and the original body contour taken at the individual C locations. This may include the following: bumper lead, bumper taper, side protrusion, side taper, etc. Record the value for each C-measurement and maximum crush.

**Measure and document on the vehicle diagram the beginning or end of the direct damage width and field L (e.g., side damage with respect to undamaged axle.)

***Measure and document on the vehicle diagram the location of the maximum crush.

NOTE: Use as many lines/columns as necessary to describe each damage profile.

TEST #890302-1

CAMERA INFORMATION

<u>CAMERA NO.</u>	<u>LOCATION</u>	<u>TYPE</u>	<u>LENS (mm)</u>	<u>SPEED (fps)</u>	<u>PURPOSE OF CAMERA DATA</u>
1	Right side wide	Photosonic 1B	25	500	Impact overall
2	Overhead wide	Photosonic 1B	13	483	Impact wide
3	Overhead tight	Photosonic 1B	25	512	Impact closeup

SECTION 4.0

TEST #890302-2 SUMMARY

TEST CONDITIONS:

TEST NUMBER: 890302-2

DATE OF TEST: 3/2/89

TIME OF TEST: 1315

AMBIENT TEMPERATURE AT IMPACT AREA: 40° F

SUBJECT VEHICLE DATA:

	<u>ACTUAL</u>	<u>INTENDED</u>
VEHICLE WEIGHT (lbs.)	2620	2620
VEHICLE ORIENTATION (deg.)	270	270
MOVING BARRIER VELOCITY (mph.)	30.0	29.8
BARRIER WEIGHT (lbs.)	2652	2652
MAXIMUM CUMULATIVE CRUSH BUMPER HEIGHT (in.)	16.2	
AVERAGE CUMULATIVE CRUSH = $\frac{\underline{C1+C6+C2+C3+C4+C5}}{2}$	10.1	
BUMPER HEIGHT (in.)		

TEST NUMBER 890302-2

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

No.	LOCATION	X*	Y*	Z*	POSITIVE	NEGATIVE	MAX G MSEC	MAX G MSEC
					DIRECTION	DIRECTION		
1	SILL RIGHT FRONT LATERAL	107.8	-27.3	14.1			1.9	161.6
2	SILL RIGHT REAR LATERAL	94.8	-27.3	14.1			1.9	160.6

* ALL MEASUREMENTS OF ACCELEROMETER LOCATIONS ARE IN INCHES.

REFERENCE: X: FORWARD FROM REAR AXLE
Y: LEFTWARD FROM VEHICLE CENTERLINE
Z: UPWARD FROM GROUND LEVEL

TEST NUMBER 890302-2

BARRIER ACCELEROMETER LOCATIONS AND DATA SUMMARY

No.	LOCATION	X*	Y*	Z*	POSITIVE	NEGATIVE		
					DIRECTION	DIRECTION		
					MAX G MSEC	MAX G MSEC		
1	BARRIER CG LONGITUDINAL	75.0	0.0	10.5	0.7	175.9	24.0	6.4

* ALL MEASUREMENTS OF ACCELEROMETER LOCATIONS ARE IN INCHES.

REFERENCE: X: + FORWARD FROM REAR BUMPER
Y: + LEFTWARD FROM VEHICLE CENTERLINE
Z: + UPWARD FROM GROUND LEVEL

TEST #890302-2

CONTACT SWITCH LOCATIONS AND DATA SUMMARY

LOCATION	SEPARATION TIME (MSEC)
BARRIER CONTACT SWITCH - LEFT	--- Y
BARRIER CONTACT SWITCH - CENTER #1	86.5
BARRIER CONTACT SWITCH - CENTER #2	26.5 Y
BARRIER CONTACT SWITCH - RIGHT	28.8 Y

Y See TEST ANOMALIES

TEST #890302-2

National Accident Sampling System - Continuous Sampling Subsystem: Vehicle Data

FIELD MEASUREMENTS

Complete When Applicable

End Damage	Side Damage
Undeformed end width _____	Bowing: B1 <u>0</u> X1 <u>0</u> _____
Corner shift: A1 _____	B2 <u>6</u> X2 <u>0.5</u> _____
A2 _____	Bowing constant
End shift at frame (CDC) (check one)	$\frac{X_1 + X_2}{2} = \underline{0.2}$
< 4 inches _____	
<u>> 4 inches X</u>	

NOTE: Measure C1 to C6 from Driver to Passenger side in Front or Rear impacts -
 Rear to Front in Side impacts.

Specific Impact Number	Plane* of C-Measurements	Direct Damage								
		Width** (CDC)	Max*** Crush	Field L**	C ₁	C ₂	C ₃	C ₄	C ₅	C ₆
Bumper height as measured				0.0	13.0	14.6	16.2	4.5	0.0	
Bumper height as corrected				0.0	13.2	14.9	16.5	4.8	0.0	
Average Crush		123.8	0.2	13.5	15.1	16.8	5.0	0.2	0.0	

Bumper height as corrected = Bumper height as measured - free space

Free Space = -0.25

Average crush = Bumper height as corrected + $\frac{X_1 + X_2}{2}$

*Identify the plane at which the C-measurements are taken (e.g., at bumper, at sill, above sill, at beltline, etc.) or label adjustments (e.g., free space).

Free space value is defined as the distance between the baseline and the original body contour taken at the individual C locations. This may include the following: bumper lead, bumper taper, side protrusion, side taper, etc. Record the value for each C-measurement and maximum crush.

**Measure and document on the vehicle diagram the beginning or end of the direct damage width and field L (e.g., side damage with respect to undamaged axle.)

***Measure and document on the vehicle diagram the location of the maximum crush.

NOTE: Use as many lines/columns as necessary to describe each damage profile.

TEST #890302-2

CAMERA INFORMATION

<u>CAMERA NO.</u>	<u>LOCATION</u>	<u>TYPE</u>	<u>LENS (mm)</u>	<u>SPEED (fps)</u>	<u>PURPOSE OF CAMERA DATA</u>
1	Right side	Photosonic 1B	25	500	Impact overall
2	Overhead wide	Photosonic 1B	13	500	Impact wide
3	Overhead tight	Photosonic 1B	25	505	Impact closeup

SECTION 5.0

TEST #890302-3 SUMMARY

TEST CONDITIONS:

TEST NUMBER: 890302-3

DATE OF TEST: 3/2/89

TIME OF TEST: 1420

AMBIENT TEMPERATURE AT IMPACT AREA: 40° F

SUBJECT VEHICLE DATA:

	<u>ACTUAL</u>	<u>INTENDED</u>
VEHICLE WEIGHT (lbs.)	2620	2620
VEHICLE ORIENTATION (deg.)	270	270
MOVING BARRIER VELOCITY (mph.)	29.8	29.8
BARRIER WEIGHT (lbs.)	2652	2652
MAXIMUM CUMULATIVE CRUSH BUMPER HEIGHT (in.)	23.2	
AVERAGE CUMULATIVE CRUSH = $\frac{C_1+C_6+C_2+C_3+C_4+C_5}{5}$	13.3	
BUMPER HEIGHT (in.)	2	

TEST NUMBER 890302-3

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

No.	LOCATION	X*	Y*	Z*	POSITIVE	NEGATIVE
					DIRECTION	DIRECTION
					MAX G MSEC	MAX G MSEC
1	SILL RIGHT FRONT LATERAL	107.8	-27.3	14.1	2.4	56.6
2	SILL RIGHT REAR LATERAL	94.8	-27.3	14.1	2.5	57.9

* ALL MEASUREMENTS OF ACCELEROMETER LOCATIONS ARE IN INCHES.

REFERENCE: X: FORWARD FROM REAR AXLE
Y: LEFTWARD FROM VEHICLE CENTERLINE
Z: UPWARD FROM GROUND LEVEL

TEST NUMBER 890302-3

BARRIER ACCELEROMETER LOCATIONS AND DATA SUMMARY

No.	LOCATION	X*	Y*	Z*	POSITIVE	NEGATIVE		
					DIRECTION	MAX G MSEC	DIRECTION	MAX G MSEC
1	BARRIER CG LONGITUDINAL	75.0	0.0	10.5	0.7	239.8	24.2	8.8

* ALL MEASUREMENTS OF ACCELEROMETER LOCATIONS ARE IN INCHES.

REFERENCE: X: + FORWARD FROM REAR BUMPER
Y: + LEFTWARD FROM VEHICLE CENTERLINE
Z: + UPWARD FROM GROUND LEVEL

TEST #890302-3

CONTACT SWITCH LOCATIONS AND DATA SUMMARY

LOCATION	SEPARATION TIME (MSEC)
BARRIER CONTACT SWITCH - LEFT	111.4
BARRIER CONTACT SWITCH - CENTER #1	8.5 Y
BARRIER CONTACT SWITCH - CENTER #2	44.0 Y
BARRIER CONTACT SWITCH - RIGHT	65.0 Y

Y See TEST ANOMALIES

TEST #890302-3

National Accident Sampling System - Continuous Sampling Subsystem: Vehicle Data

FIELD MEASUREMENTS

Complete When Applicable

End Damage	Side Damage
Undefomed end width _____	Bowing: B1 <u>2</u> X1 <u>0.0</u>
Corner shift: A1 _____	B2 <u>6</u> X2 <u>1.5</u>
A2 _____	Bowing constant
End shift at frame (CDC) (check one)	<u>X1 + X2</u> = <u>0.8</u> 2
<4 inches _____	
>4 inches <u>X</u>	

NOTE: Measure C1 to C6 from Driver to Passenger side in Front or Rear impacts -
 Rear to Front in Side impacts.

Specific Impact Number	Plane* of C-Measurements	Direct Damage						$\pm D$	
		Width** (CDC)	Max*** Crush	Field L**	C ₁	C ₂	C ₃		C ₄
Bumper height as measured				0.0	8.2	21.0	23.2	9.4	0.0
Bumper height as corrected				0.0	8.5	21.2	23.5	9.6	0.0
Average Crush		131.4	0.8	9.2	22.0	24.2	10.4	0.8	-5.0

Bumper height as corrected = Bumper height as measured - free space
 Free Space = -0.25

Average crush = Bumper height as corrected + X1 + X2
 2

*Identify the plane at which the C-measurements are taken (e.g., at bumper, at sill, above sill, at beltline, etc.) or label adjustments (e.g., free space).

Free space value is defined as the distance between the baseline and the original body contour taken at the individual C locations. This may include the following: bumper lead, bumper taper, side protrusion, side taper, etc. Record the value for each C-measurement and maximum crush.

**Measure and document on the vehicle diagram the beginning or end of the direct damage width and field L (e.g., side damage with respect to undamaged axle.)

***Measure and document on the vehicle diagram the location of the maximum crush.

NOTE: Use as many lines/columns as necessary to describe each damage profile.

TEST #890302-3

CAMERA INFORMATION

<u>CAMERA NO.</u>	<u>LOCATION</u>	<u>TYPE</u>	<u>LENS (mm)</u>	<u>SPEED (fps)</u>	<u>PURPOSE OF CAMERA DATA</u>
1	Right side	Photosonic 1B	25	500	Impact overall
2	Overhead wide	Photosonic 1B	13	500	Impact wide
3	Overhead tight	Photosonic 1B	25	500	Impact closeup

SECTION 6.0

TEST #890302-4 SUMMARY

TEST CONDITIONS:

TEST NUMBER: 890302-4

DATE OF TEST: 3/2/89

TIME OF TEST: 1515

AMBIENT TEMPERATURE AT IMPACT AREA: 40° F

SUBJECT VEHICLE DATA:

	<u>ACTUAL</u>	<u>INTENDED</u>
VEHICLE WEIGHT (lbs.)	2620	2620
VEHICLE ORIENTATION (deg.)	270	270
MOVING BARRIER VELOCITY (mph.)	39.8	39.8
BARRIER WEIGHT (lbs.)	2652	2652
MAXIMUM CUMULATIVE CRUSH BUMPER HEIGHT (in.)	33.5	
AVERAGE CUMULATIVE CRUSH = $\frac{\underline{C_1+C_6+C_2+C_3+C_4+C_5}}{2}$	18.7	
BUMPER HEIGHT (in.)		

TEST NUMBER 890302-4

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

No.	LOCATION	X*	Y*	Z*	POSITIVE	NEGATIVE	MAX G MSEC	MAX G MSEC
					DIRECTION	DIRECTION		
1	SILL RIGHT FRONT LATERAL	107.8	-27.3	14.1			7.0	65.4
2	SILL RIGHT REAR LATERAL	94.8	-27.3	14.1			7.7	65.3

* ALL MEASUREMENTS OF ACCELEROMETER LOCATIONS ARE IN INCHES.

REFERENCE: X: FORWARD FROM REAR AXLE
Y: LEFTWARD FROM VEHICLE CENTERLINE
Z: UPWARD FROM GROUND LEVEL

TEST NUMBER 890302-4

BARRIER ACCELEROMETER LOCATIONS AND DATA SUMMARY

No.	LOCATION	X*	Y*	Z*	POSITIVE	NEGATIVE		
					DIRECTION	DIRECTION		
					MAX G MSEC	MAX G MSEC		
1	BARRIER CG LONGITUDINAL	75.0	0.0	10.5	2.3	205.3	36.3	14.5

* ALL MEASUREMENTS OF ACCELEROMETER LOCATIONS ARE IN INCHES.

REFERENCE: X: + FORWARD FROM REAR BUMPER
Y: + LEFTWARD FROM VEHICLE CENTERLINE
Z: + UPWARD FROM GROUND LEVEL

TEST #890302-4

CONTACT SWITCH LOCATIONS AND DATA SUMMARY

LOCATION	SEPARATION TIME (MSEC)
BARRIER CONTACT SWITCH - LEFT	137.5
BARRIER CONTACT SWITCH - CENTER #1	15.0
BARRIER CONTACT SWITCH - CENTER #2	75.5
BARRIER CONTACT SWITCH - RIGHT	101.0 ^Y

^Y See TEST ANOMALIES

TEST #890302-4

National Accident Sampling System - Continuous Sampling Subsystem: Vehicle Data

FIELD MEASUREMENTS

Complete When Applicable

End Damage	Side Damage
Undeformed end width _____	Bowing: B1 <u>2</u> X1 <u>0</u>
Corner shift: A1 _____	B2 <u>7</u> X2 <u>0</u>
A2 _____	Bowing constant
End shift at frame (CDC) (check one)	<u>X1 + X2</u> = <u>0</u>
<4 inches _____	2
>4 inches <u>X</u>	

NOTE: Measure C1 to C6 from Driver to Passenger side in Front or Rear impacts -
 Rear to Front in Side impacts.

Specific Impact Number	Plane* of C-Measurements	Direct Damage						±D	
		Width** (CDC)	Max*** Crush	Field L**	C ₁	C ₂	C ₃		C ₄
Bumper height as measured				0.0	7.5	31.8	33.5	19.5	0.0
Bumper height as corrected				0.0	7.8	32.0	33.8	19.8	0.0
Average Crush		140.8	0.0	7.8	32.0	33.8	19.8	0.0	-12.5

Bumper height as corrected = Bumper height as measured - free space
 Free Space = -0.25

Average crush = Bumper height as corrected + X1 + X2
 2

*Identify the plane at which the C-measurements are taken (e.g., at bumper, at sill, above sill, at beltline, etc.) or label adjustments (e.g., free space).

Free space value is defined as the distance between the baseline and the original body contour taken at the individual C locations. This may include the following: bumper lead, bumper taper, side protrusion, side taper, etc. Record the value for each C-measurement and maximum crush.

**Measure and document on the vehicle diagram the beginning or end of the direct damage width and field L (e.g., side damage with respect to undamaged axle.)

***Measure and document on the vehicle diagram the location of the maximum crush.

NOTE: Use as many lines/columns as necessary to describe each damage profile.

TEST #890302-4

CAMERA INFORMATION

<u>CAMERA NO.</u>	<u>LOCATION</u>	<u>TYPE</u>	<u>LENS (mm)</u>	<u>SPEED (fps)</u>	<u>PURPOSE OF CAMERA DATA</u>
1	Right side	Photosonic 1B	25	505	Impact overall
2	Overhead wide	Photosonic 1B	13	460	Impact wide
3	Overhead tight	Photosonic 1B	25	505	Impact closeup



APPENDIX A
PHOTOGRAPHS

THE
SCHOOL
OF
THE
ARTS
AND
DESIGN
UNIVERSITY
OF
THE
ARTS

TEST #890302-1
LIST OF PHOTOGRAPHS

- A-1. PRE-TEST OVERALL FRONT VIEW
- A-2. POST-TEST OVERALL FRONT VIEW
- A-3. PRE-TEST OVERALL LEFT SIDE - VIEW 1
- A-4. POST-TEST OVERALL LEFT SIDE - VIEW 1
- A-5. PRE-TEST OVERALL LEFT SIDE - VIEW 2
- A-6. POST-TEST OVERALL LEFT SIDE - VIEW 2
- A-7. PRE-TEST OVERALL REAR VIEW
- A-8. POST-TEST OVERALL REAR VIEW
- A-9. PRE-TEST OVERALL RIGHT SIDE VIEW
- A-10. PRE-TEST CLOSE-UP LEFT FRONT VIEW
- A-11. POST-TEST CLOSE-UP LEFT FRONT VIEW
- A-12. PRE-TEST CLOSE-UP LEFT REAR VIEW
- A-13. POST-TEST CLOSE-UP LEFT REAR VIEW
- A-14. POST-TEST CONTOURED MOVING BARRIER FACE



Figure A-1. PRE-TEST OVERALL FRONT VIEW





Figure A-3. PRE-TEST OVERALL LEFT SIDE - VIEW 1



Figure A-4. POST-TEST OVERALL LEFT SIDE - VIEW 1



Figure A-5. PRE-TEST OVERALL LEFT SIDE - VIEW 2



Figure A-6. POST-TEST OVERALL LEFT SIDE - VIEW 2



Figure A-7. PRE-TEST OVERALL REAR VIEW

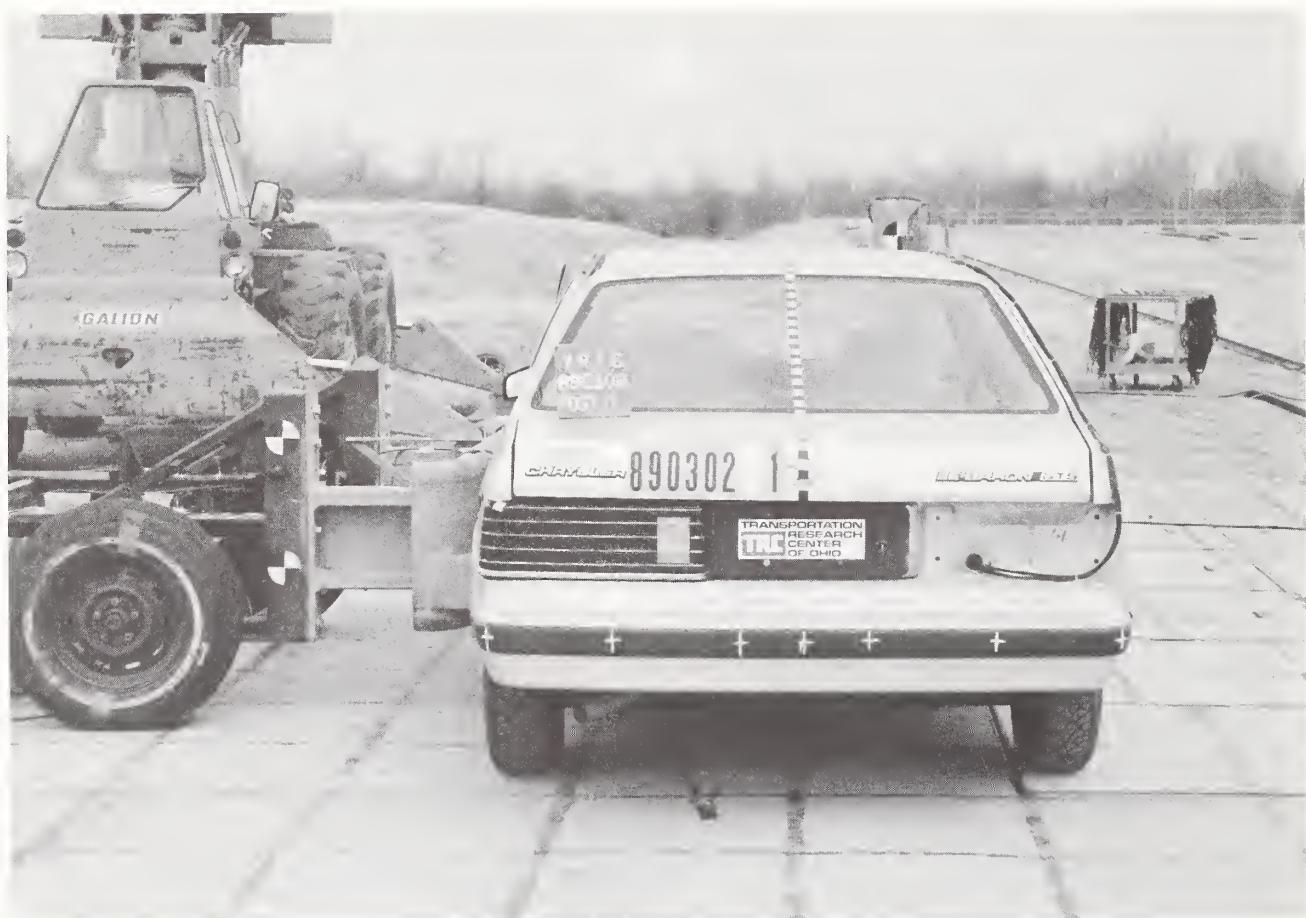


Figure A-8. POST-TEST OVERALL REAR VIEW



Figure A-9. PRE-TEST OVERALL RIGHT SIDE VIEW



Figure A-10. PRE-TEST CLOSE-UP LEFT FRONT VIEW



Figure A-11. POST-TEST CLOSE-UP LEFT FRONT VIEW



Figure A-12. PRE-TEST CLOSE-UP LEFT REAR VIEW



Figure A-13. POST-TEST CLOSE-UP LEFT REAR VIEW

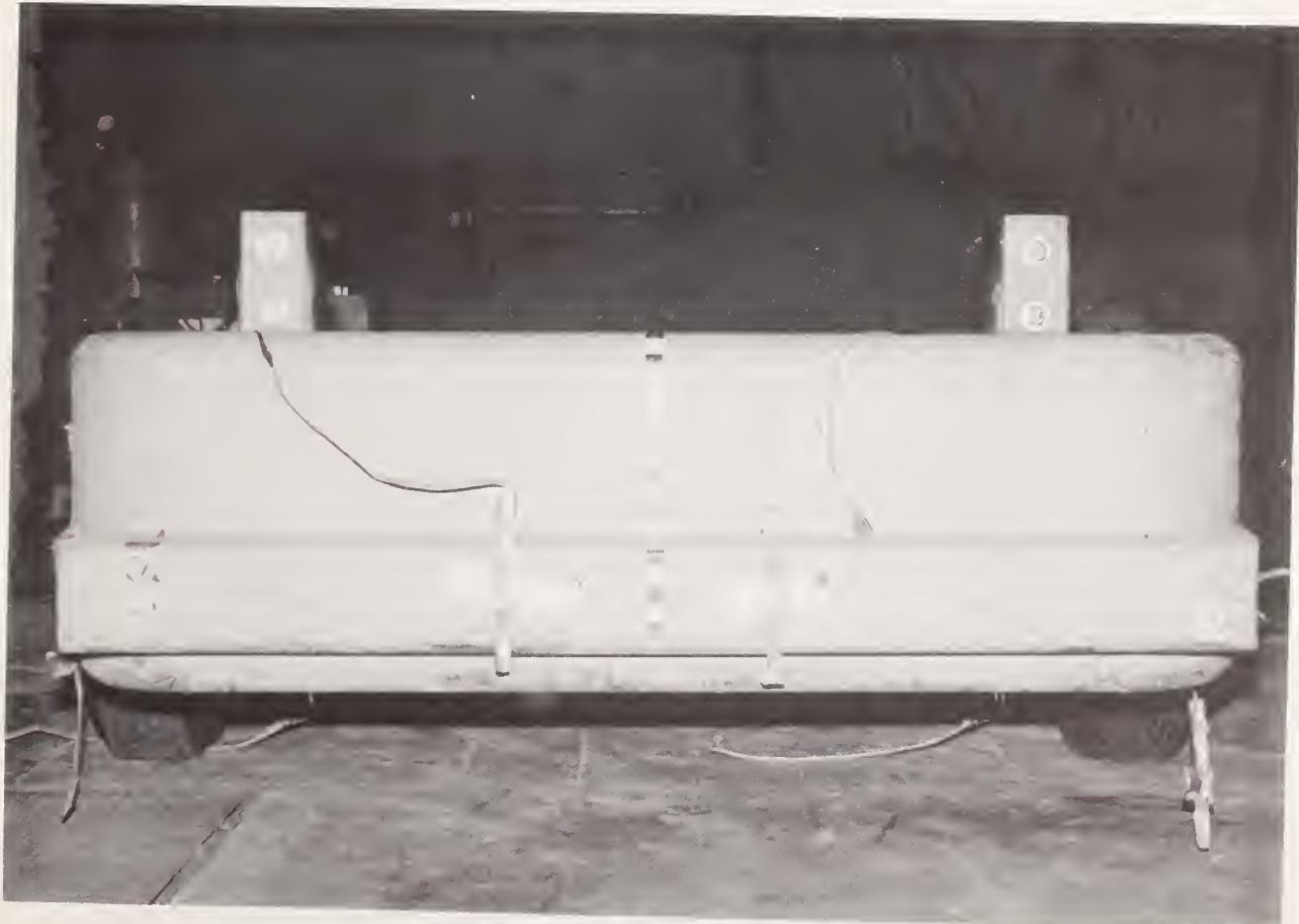


Figure A-14. POST-TEST CONTOURED MOVING BARRIER FACE

TEST #890302-2
LIST OF PHOTOGRAPHS

- A-15. POST-TEST OVERALL FRONT VIEW
- A-16. POST-TEST OVERALL LEFT SIDE - VIEW 1
- A-17. POST-TEST OVERALL LEFT SIDE - VIEW 2
- A-18. POST-TEST OVERALL REAR VIEW
- A-19. POST-TEST OVERALL RIGHT SIDE VIEW
- A-20. POST-TEST CLOSE-UP LEFT FRONT VIEW
- A-21. POST-TEST CLOSE-UP LEFT REAR VIEW



Figure A-15. POST-TEST OVERALL FRONT VIEW



Figure A-16. POST-TEST OVERALL LEFT SIDE - VIEW 1



Figure A-17. POST-TEST OVERALL LEFT SIDE - VIEW 2



Figure A-18. POST-TEST OVERALL REAR VIEW



Figure A-19. POST-TEST OVERALL RIGHT SIDE VIEW



Figure A-20. POST-TEST CLOSE-UP LEFT FRONT VIEW



Figure A-21. POST-TEST CLOSE-UP LEFT REAR VIEW

TEST #890302-3

LIST OF PHOTOGRAPHS

- A-22. POST-TEST OVERALL FRONT VIEW
- A-23. POST-TEST OVERALL LEFT SIDE - VIEW 1
- A-24. POST-TEST OVERALL LEFT SIDE - VIEW 2
- A-25. POST-TEST OVERALL RIGHT SIDE VIEW
- A-26. POST-TEST OVERALL REAR VIEW
- A-27. POST-TEST CLOSE-UP LEFT SIDE VIEW
- A-28. POST-TEST CLOSE-UP LEFT FRONT - VIEW 1
- A-29. POST-TEST CLOSE-UP LEFT FRONT - VIEW 2
- A-30. POST-TEST CLOSE-UP LEFT FRONT - VIEW 3
- A-31. POST-TEST CLOSE-UP LEFT REAR VIEW





Figure A-22. POST-TEST OVERALL FRONT VIEW



Figure A-23. POST-TEST OVERALL LEFT SIDE - VIEW 1



Figure A-24. POST-TEST OVERALL LEFT SIDE - VIEW 2



Figure A-25 POST-TEST OVERALL RIGHT SIDE VIEW

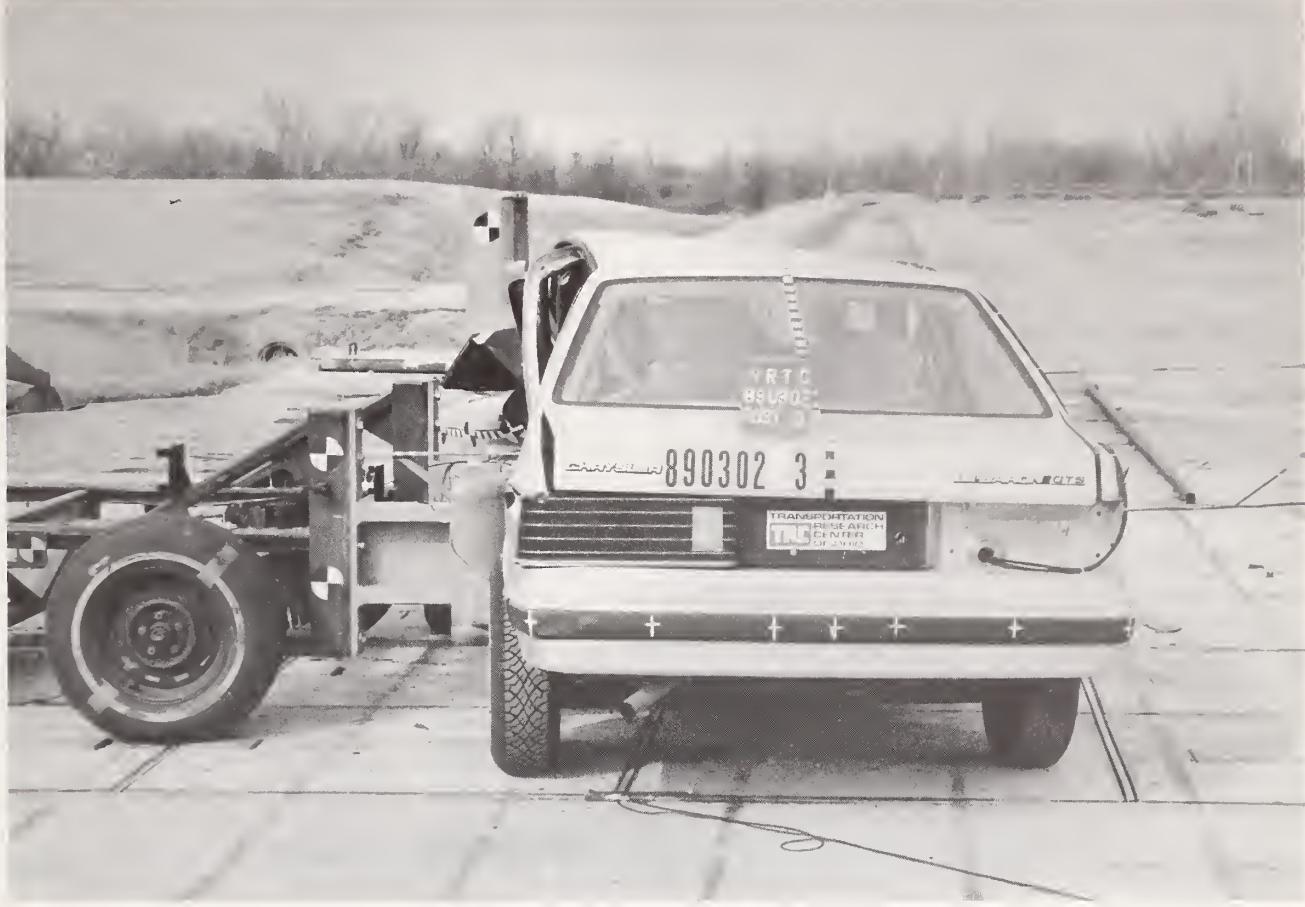


Figure A-26. POST-TEST OVERALL REAR VIEW



Figure A-27. POST-TEST CLOSE-UP LEFT SIDE VIEW



Figure A-28. POST-TEST CLOSE-UP LEFT FRONT - VIEW 1

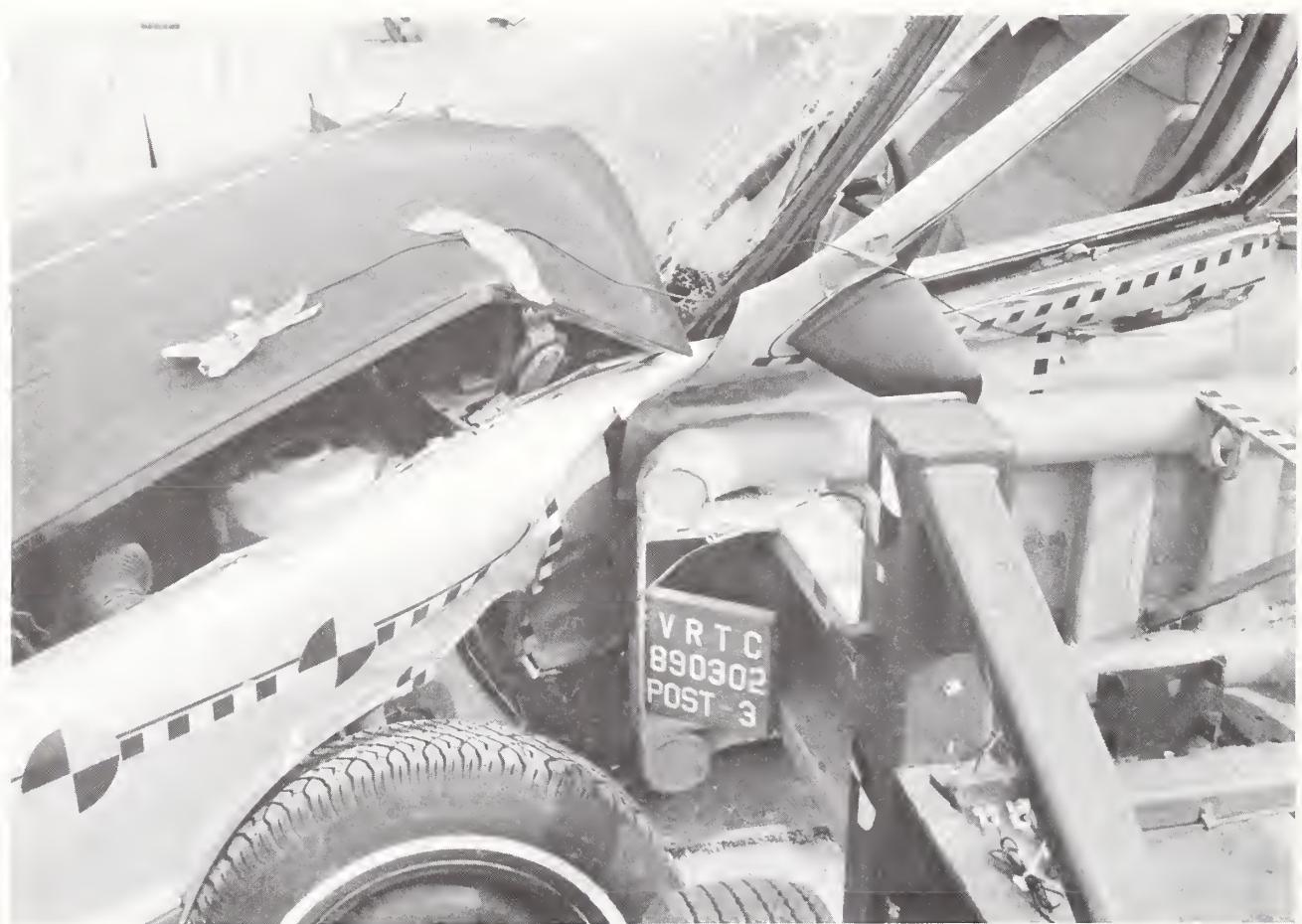


Figure A-29. POST-TEST CLOSE-UP LEFT FRONT - VIEW 2



Figure A-30. POST-TEST CLOSE-UP LEFT FRONT - VIEW 3

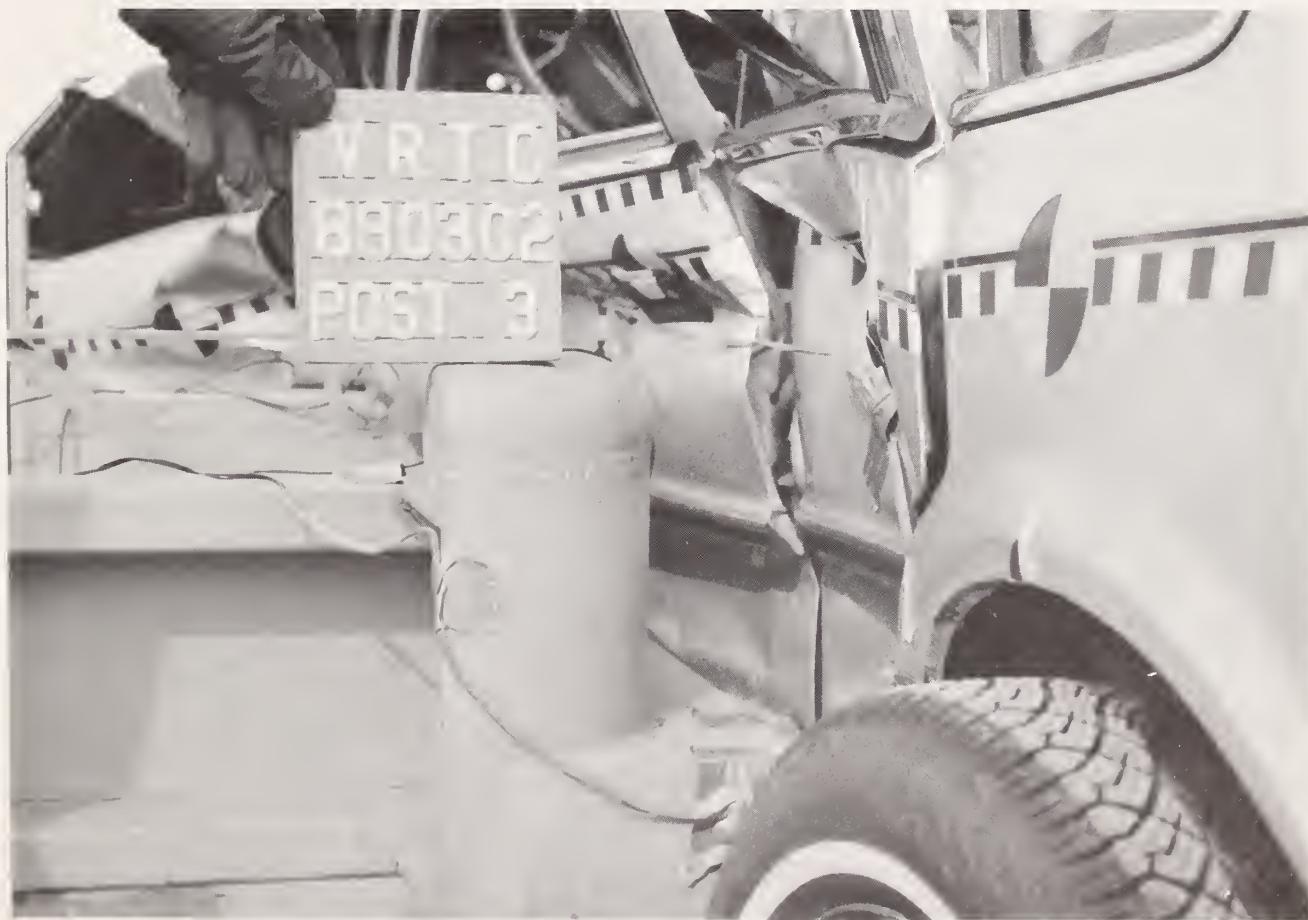


Figure A-31. POST-TEST CLOSE-UP LEFT REAR VIEW

TEST #890302-4
LIST OF PHOTOGRAPHS

- A-32. POST-TEST OVERALL FRONT VIEW
- A-33. POST-TEST OVERALL LEFT SIDE - VIEW 1
- A-34. POST-TEST OVERALL LEFT SIDE - VIEW 2
- A-35. POST-TEST OVERALL REAR VIEW
- A-36. POST-TEST OVERALL RIGHT SIDE VIEW
- A-37. POST-TEST CLOSE-UP LEFT SIDE VIEW
- A-38. POST-TEST CLOSE-UP LEFT FRONT - VIEW 1
- A-39. POST-TEST CLOSE-UP LEFT FRONT - VIEW 2
- A-40. POST-TEST CLOSE-UP LEFT REAR VIEW
- A-41. POST-TEST ONBOARD LEFT FRONT DOOR VIEW
- A-42. POST-TEST ONBOARD LEFT REAR DOOR VIEW



Figure A-32. POST-TEST OVERALL FRONT VIEW

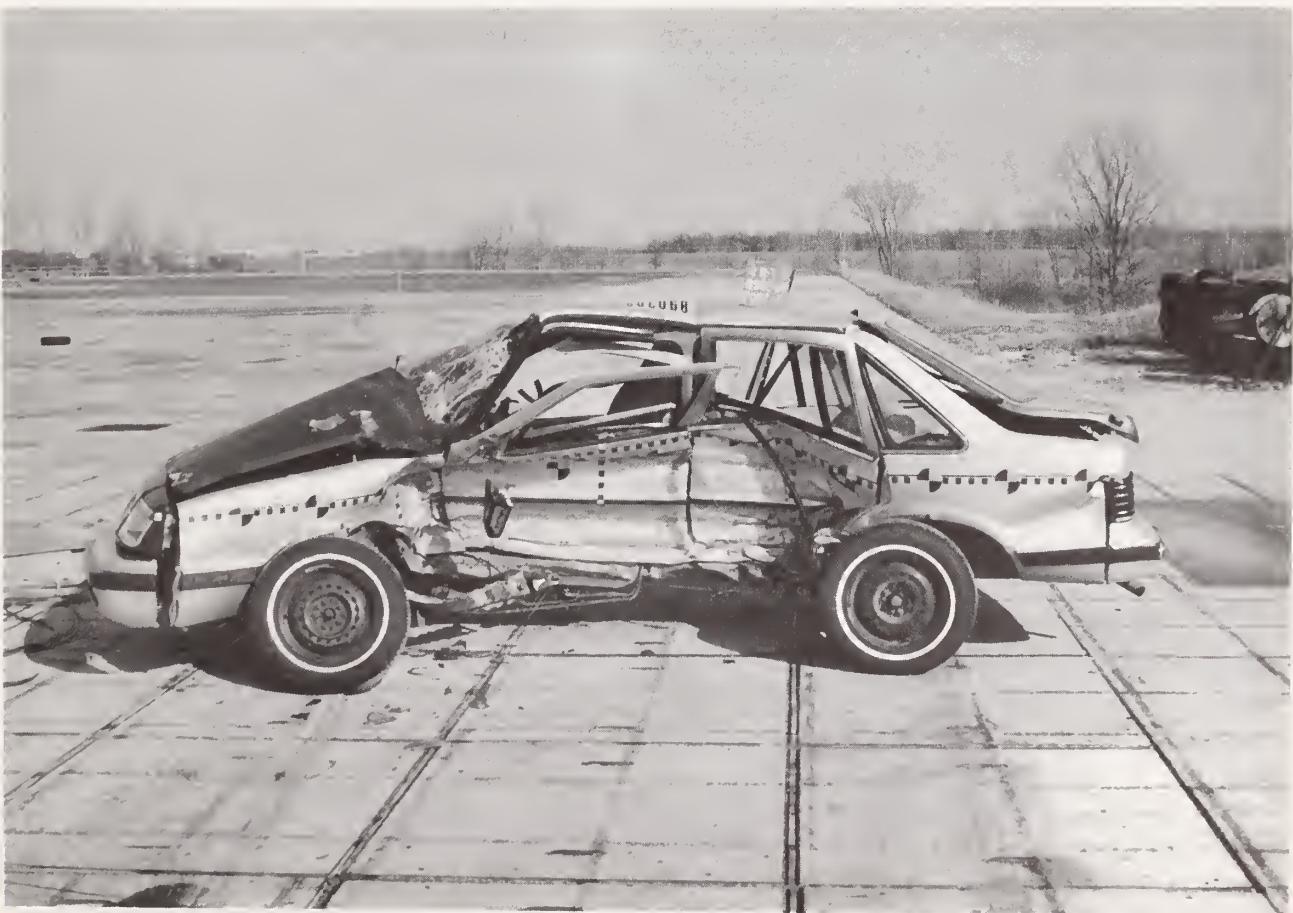


Figure A-33. POST-TEST OVERALL LEFT SIDE - VIEW



Figure A-34. POST-TEST OVERALL LEFT SIDE - VIEW 2



Figure A-35. POST-TEST OVERALL REAR VIEW



Figure A-36. POST-TEST OVERALL RIGHT SIDE VIEW

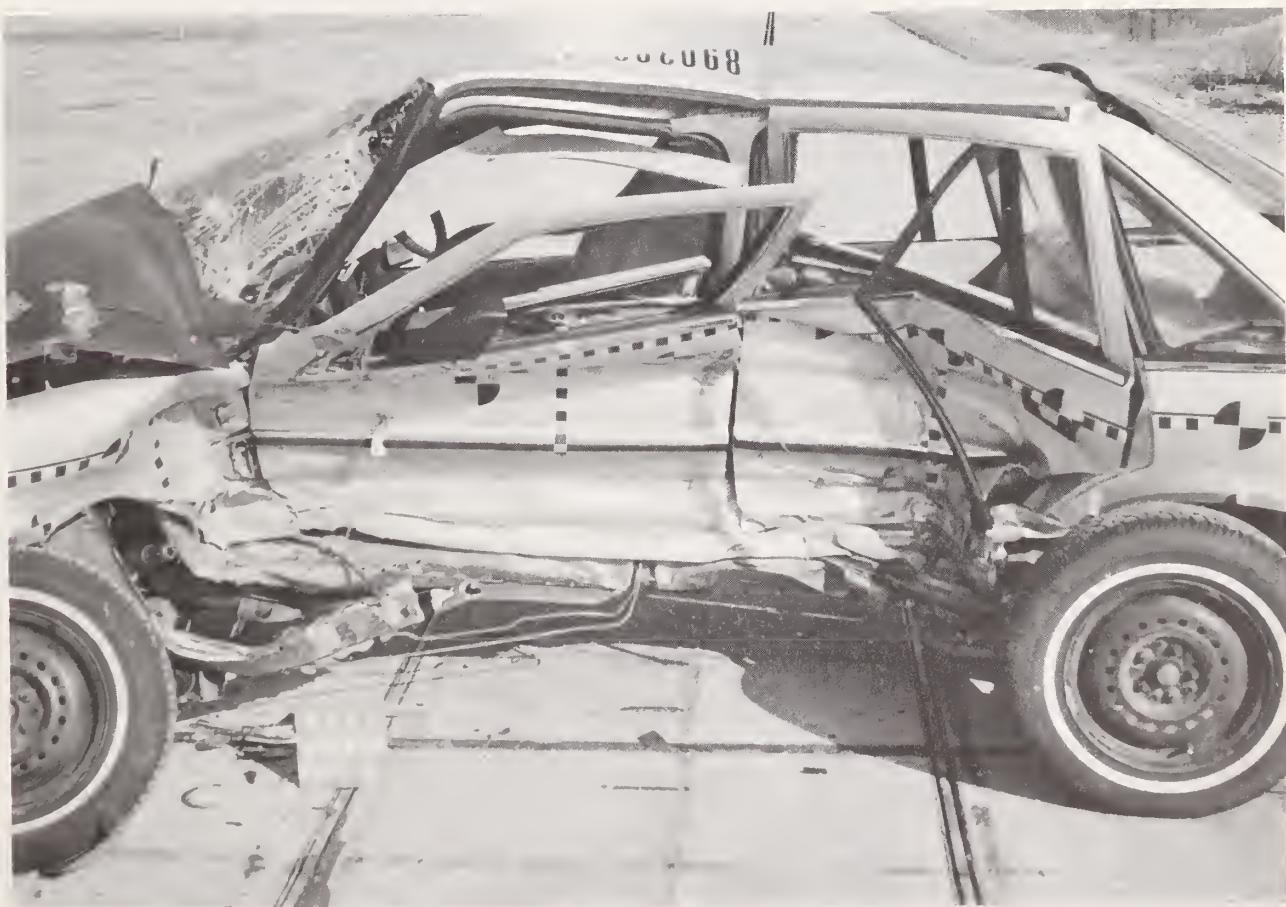


Figure A-37. POST-TEST CLOSE-UP LEFT SIDE VIEW



Figure A-38. POST-TEST CLOSE-UP LEFT FRONT - VIEW 1



Figure A-39. POST-TEST CLOSE-UP LEFT FRONT - VIEW 2

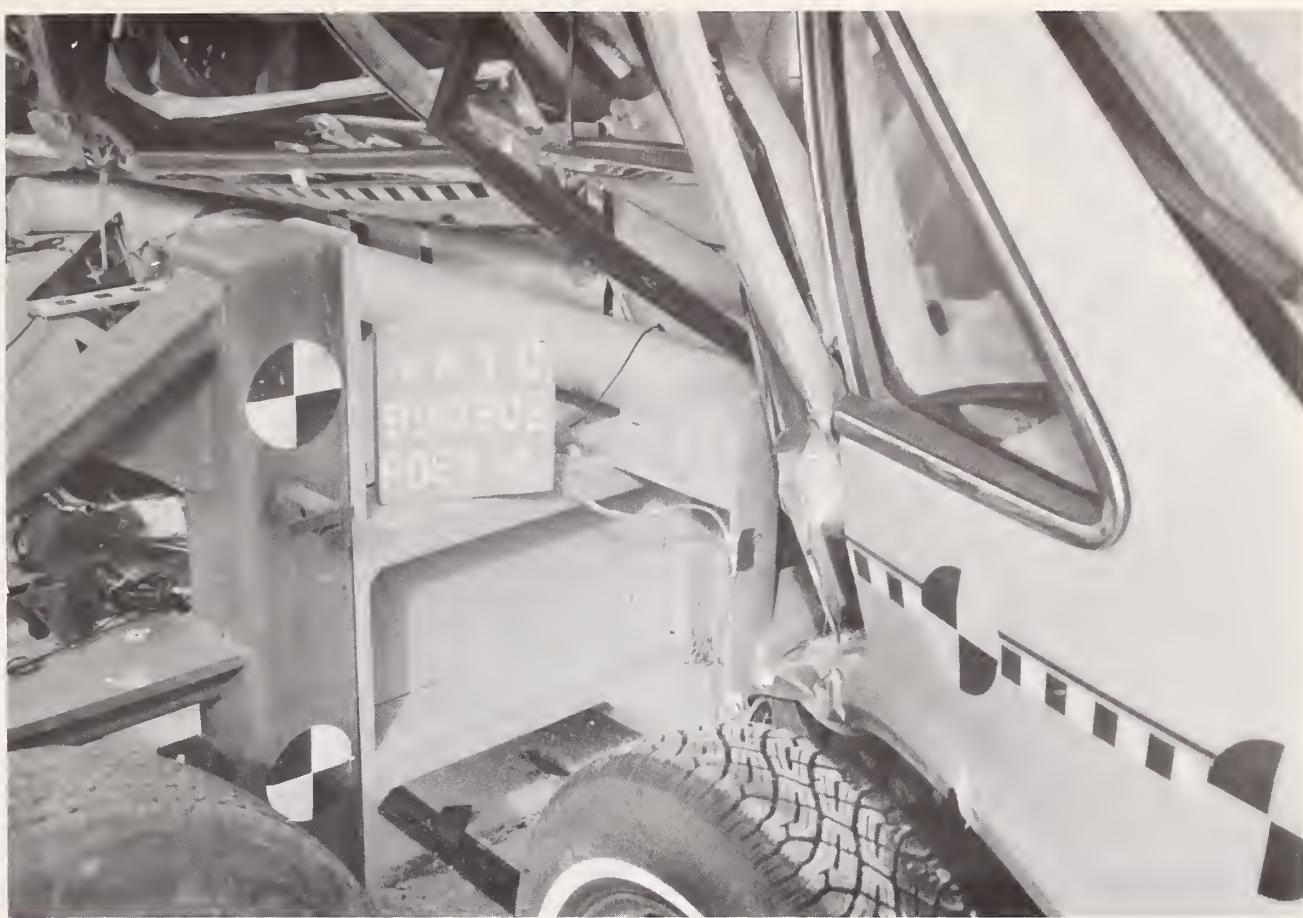


Figure A-40. POST-TEST CLOSE-UP LEFT REAR VIEW



Figure A-41. POST-TEST ONBOARD LEFT FRONT DOOR VIEW



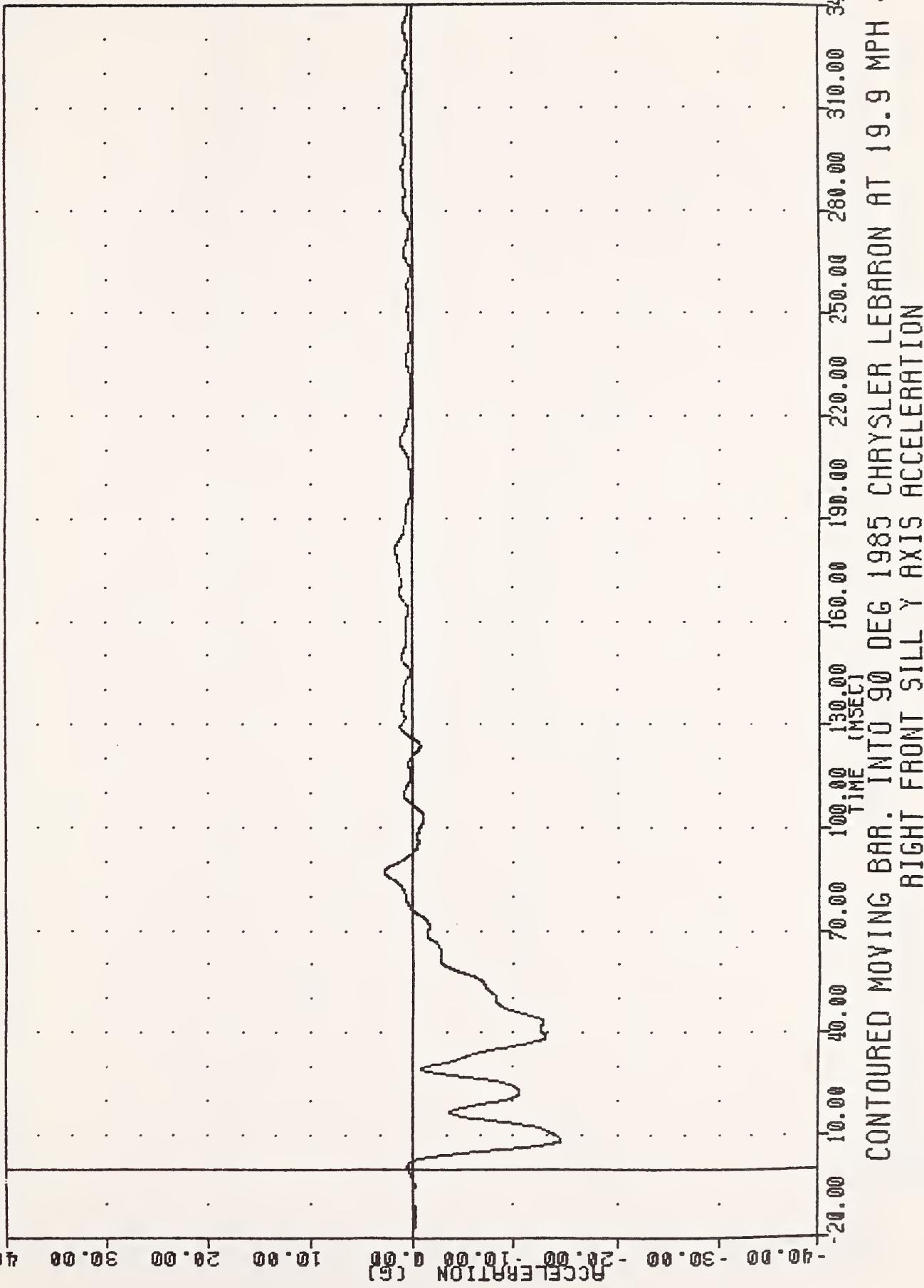
Figure A-42. POST-TEST ONBOARD LEFT REAR DOOR VIEW

APPENDIX B
DATA PLOTS

TEST #890302-1

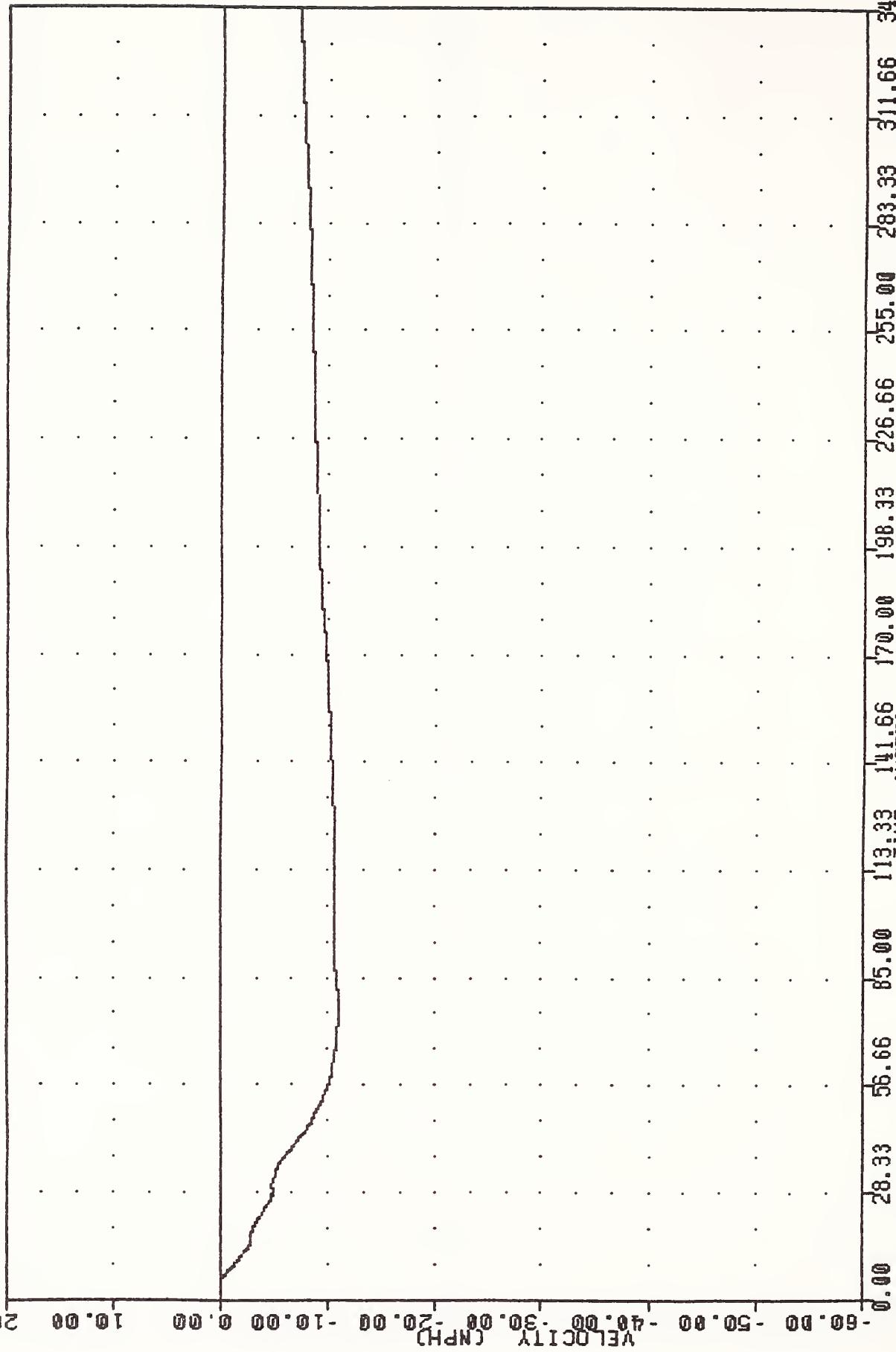
YATC-1
CRASH III DAMAGE ALGORITHM
89061
RFSY6

FILTER = ELPP 100/ 250/-16
MIN, MAX VALUES = -14.618 8.631
2.828 87.00



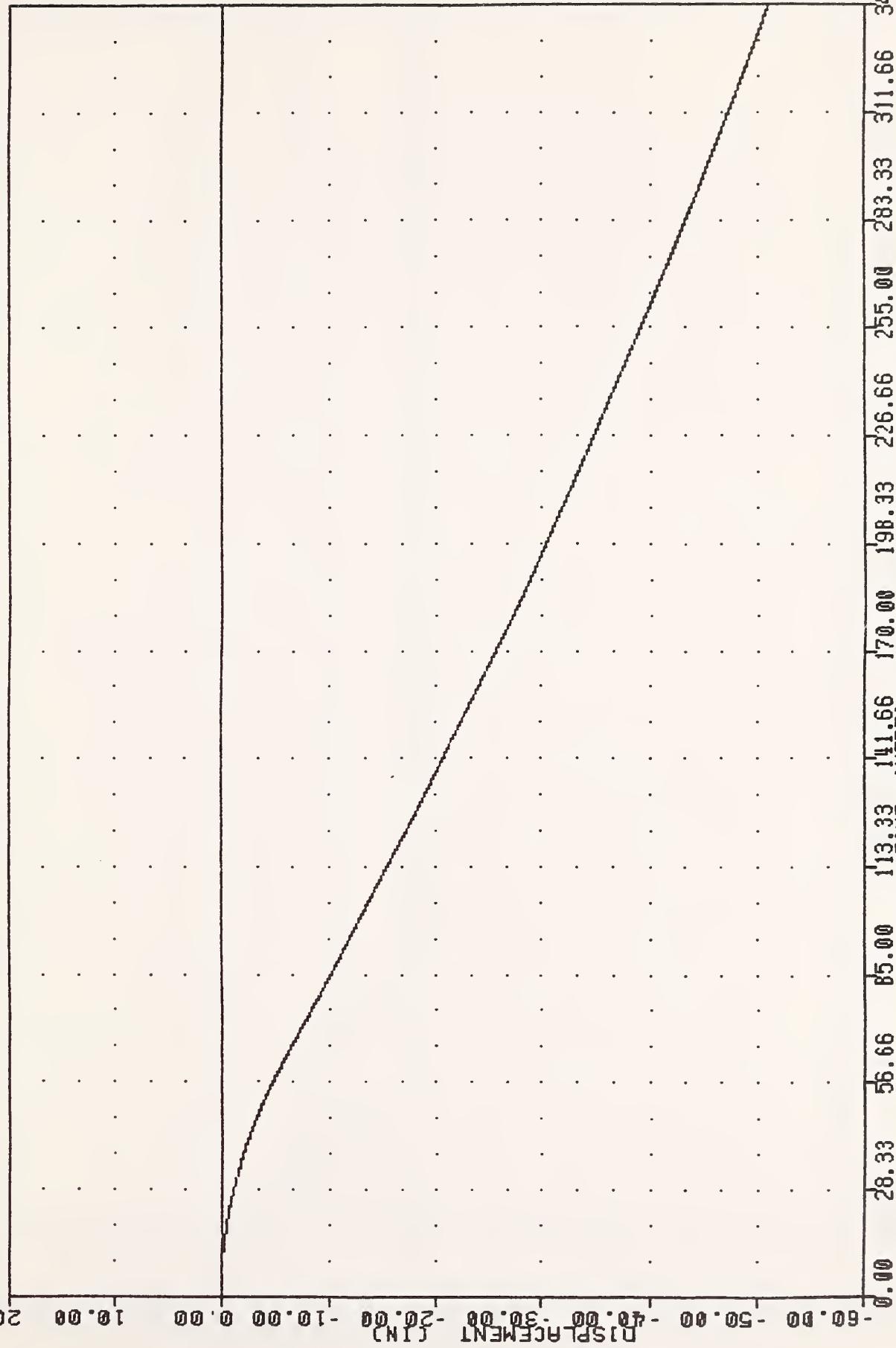
VRTC-1 890302-1
CRASH III DAMAGE ALGORITHM
89061
RFSYY

FILTER = FILPF 1650/ 5214/ -40
MIN, MAX VALUES = -11.018 76.13 , 0.018 3.13



YRTC-1 '890302-1
CRASH III DAMAGE ALGORITHM
89061
RFSYD

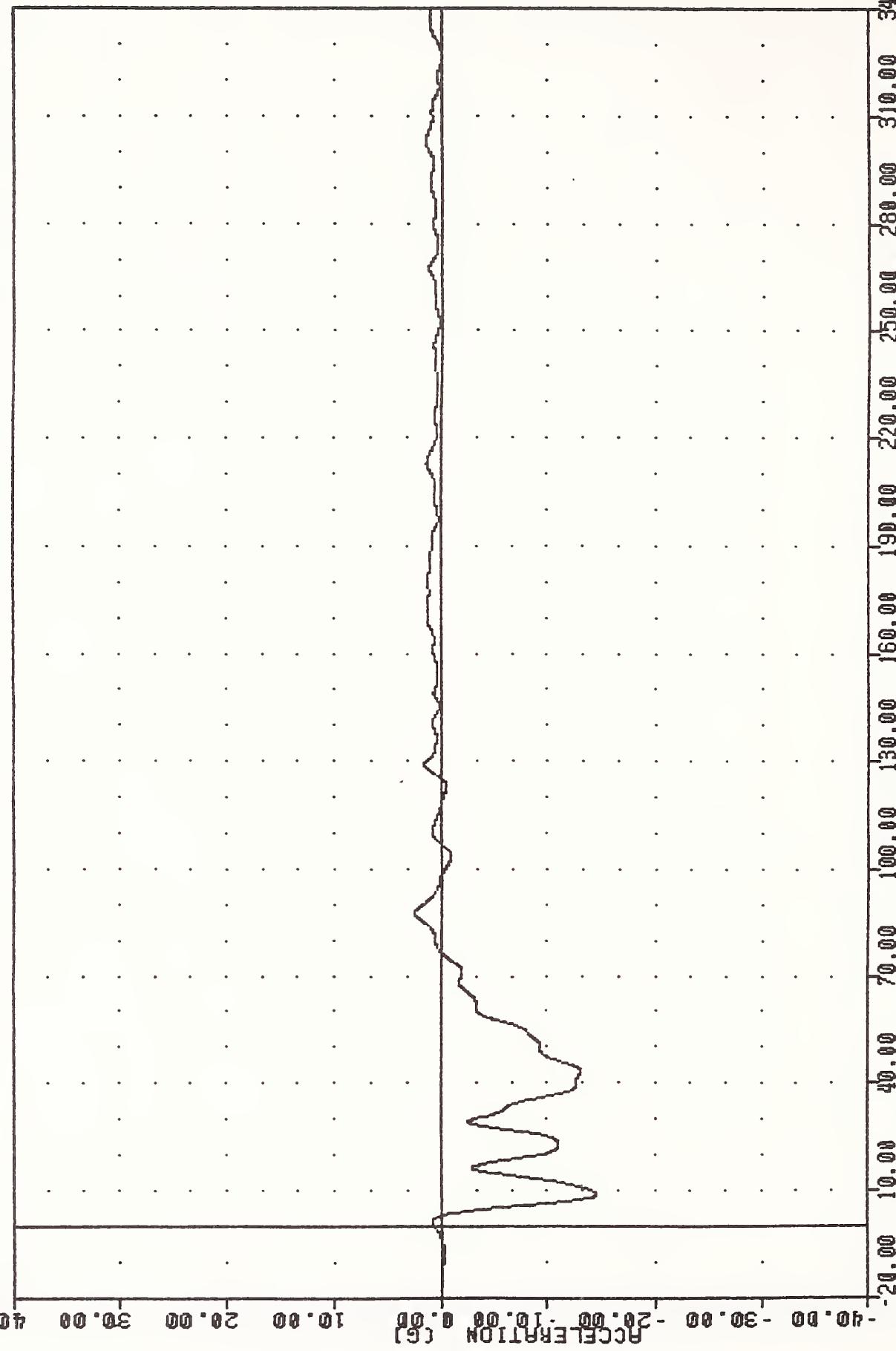
FILTER = ALPF 1650/ 5214/-40
MIN, MAX VALUES = -50.97 & 340.00 , 0.00 & 3.88



CONToured moving bar. INTO 90 DEG 1985 CHRYSLER LEBARON AT 19.9 MPH x1
RIGHT FRONT SILL Y AXIS DISPLACEMENT

YRTC-1 890302-1
CRASH III DAMAGE ALGORITHM
89061
RASYG

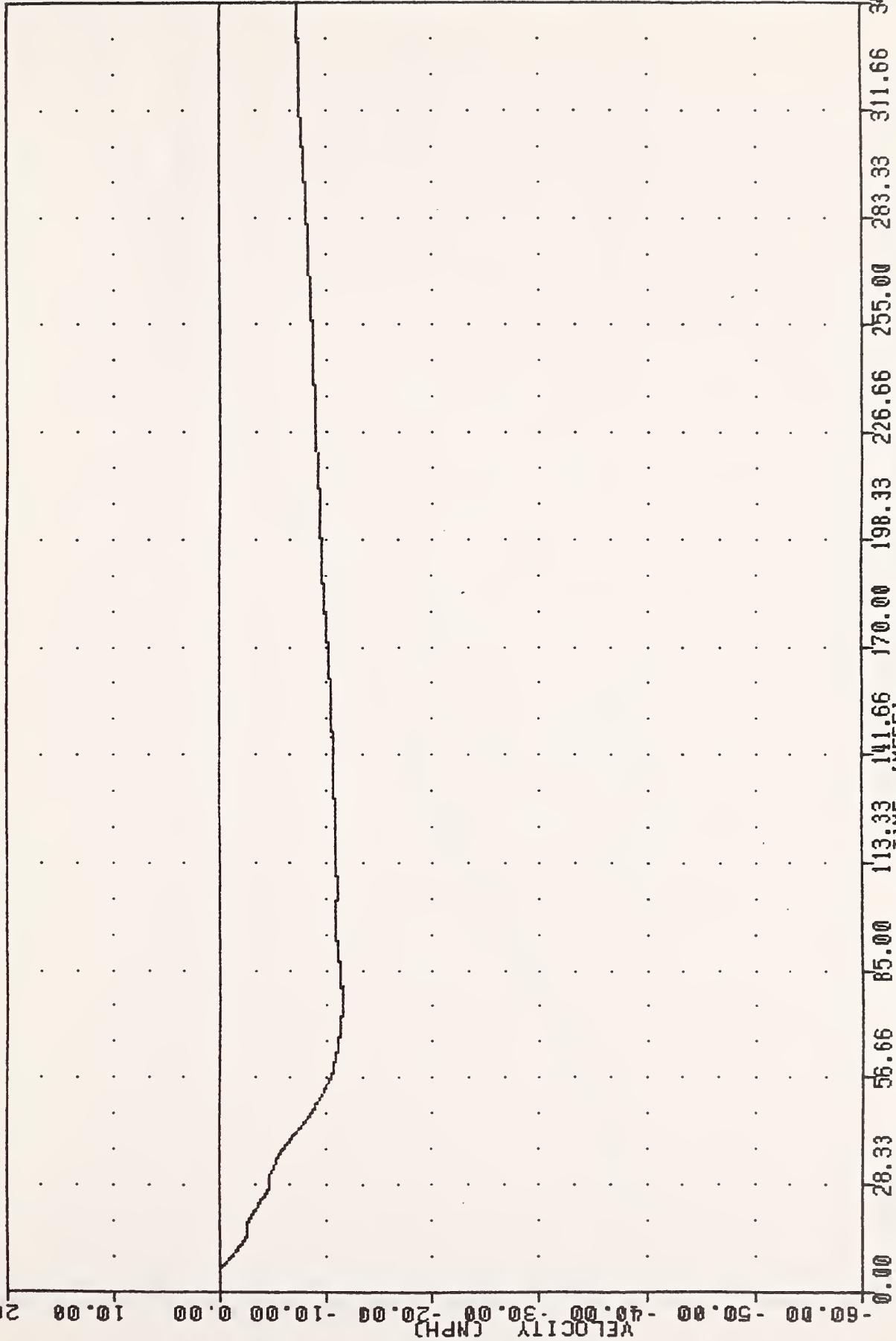
FILTER = BLPF 100/ 250/ -16
MIN. MAX VALUES = -14.61@ 8.88 , 2.62 @ 87.38



CONToured moving bar. INTO 90 DEG 1985 CHRYSLER LEBARON AT 19.9 MPH x1
RIGHT REAR SILL Y AXIS ACCELERATION

VRIC-1 890302-1
CRASH III DAMAGE ALGORITHM
89061
ARSYA

FILTER = ALPF 1650/ 5214/ -40
MIN, MAX VALUES = -11.428 76.25 , 0.04 e 3.13

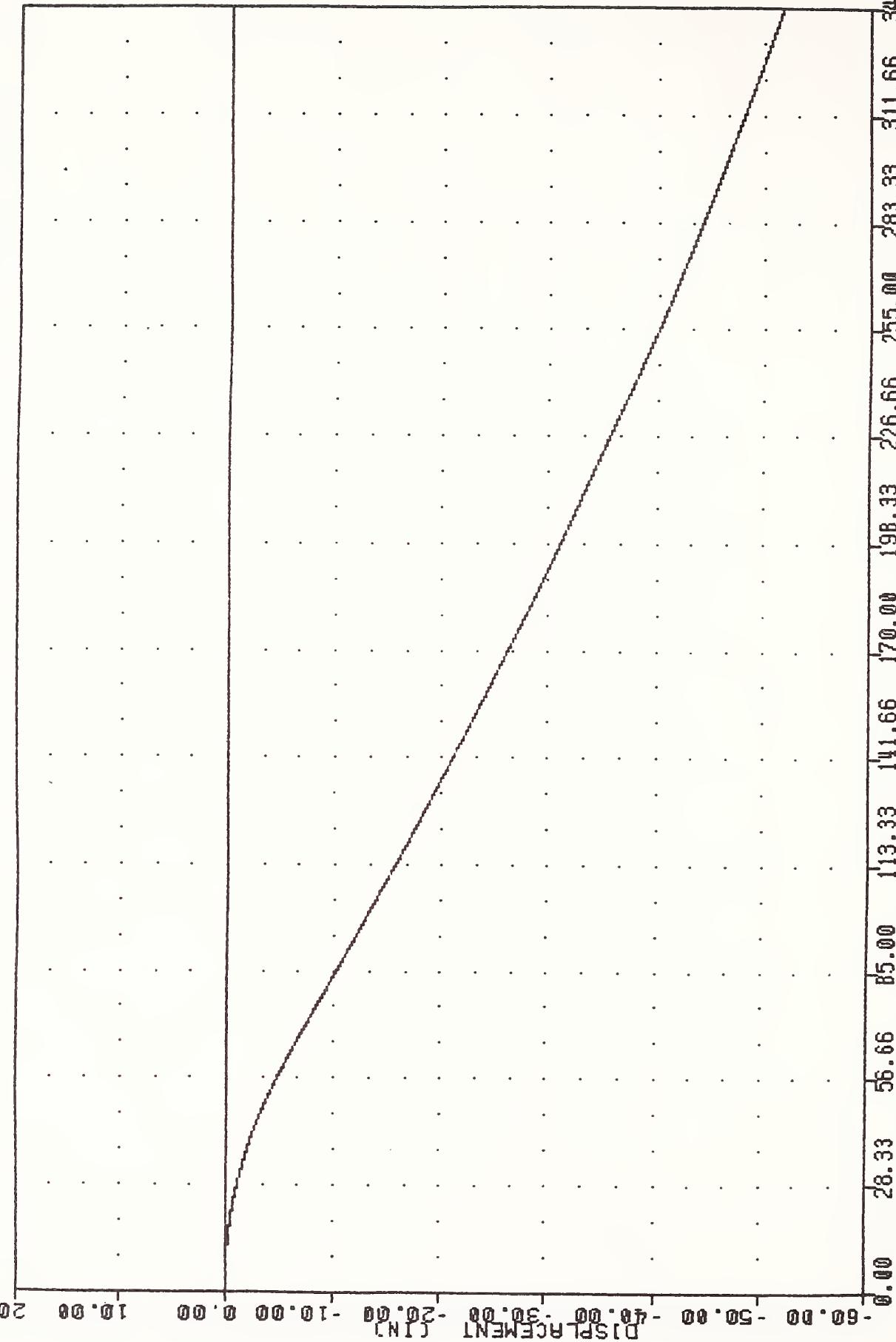


0.00 28.33 56.66 85.00 113.33 141.66 170.00 198.33 226.66 255.00 283.33 311.66 340.00
TIME (SEC)
CONTOURED MOVING BARR. INTO 90 DEG 1985 CHRYSLER LEBARON AT 19.9 MPH x1
RIGHT REAR SILL Y AXIS VELOCITY

VRIC-1 , 890302-1
CRASH III DAMAGE ALGORITHM

89061
RSTD

FILTER = FILFF 1650/ 5214/ -40
MIN, MAX VALUES = -51.838 340.00 , 0.00 & 5.25

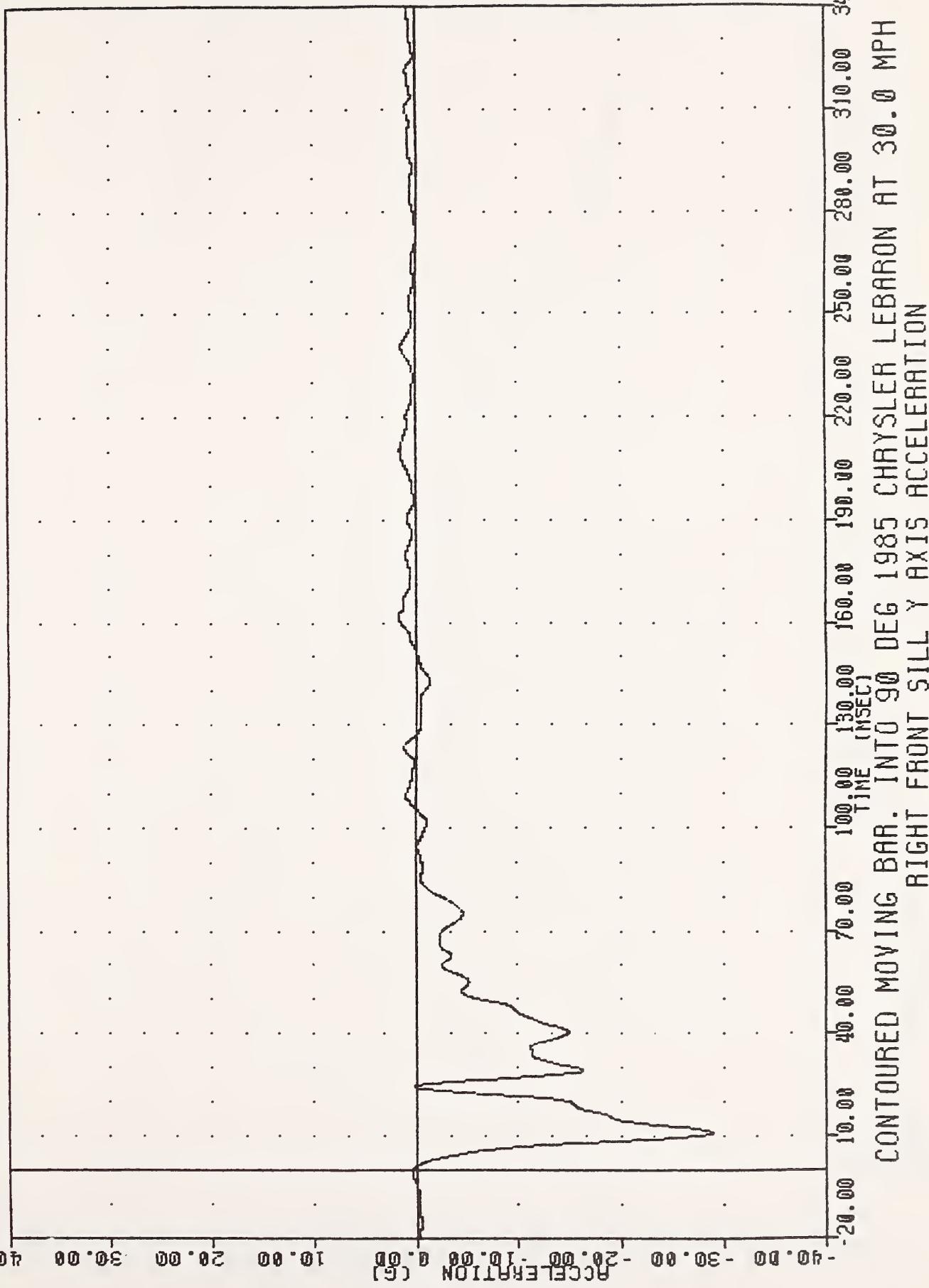


CONTOURED MOVING BAR. INTO 90 DEG 1985 CHRYSLER LEBARON AT 19.9 MPH x 1
RIGHT REAR SILL Y AXIS DISPLACEMENT

TEST #890302-2

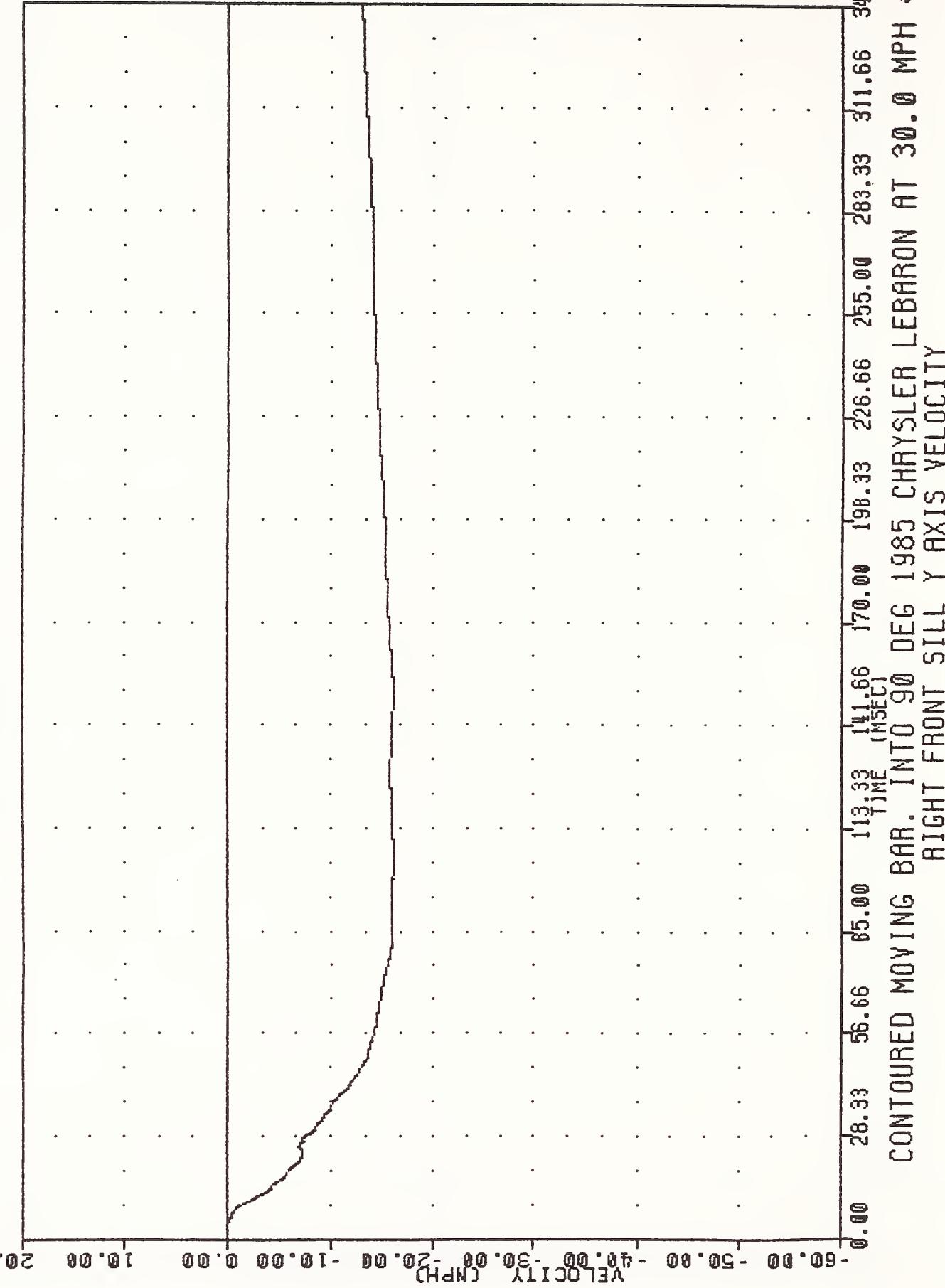
VRIC-2 , 890502-2
CRASH III DAMAGE ALGORITHM
89061
AFSYG

FILTER = BLFP 100/ 250/ -16
MIN, MAX VALUES = -28.948 10.88 , 1.81 & 161.63



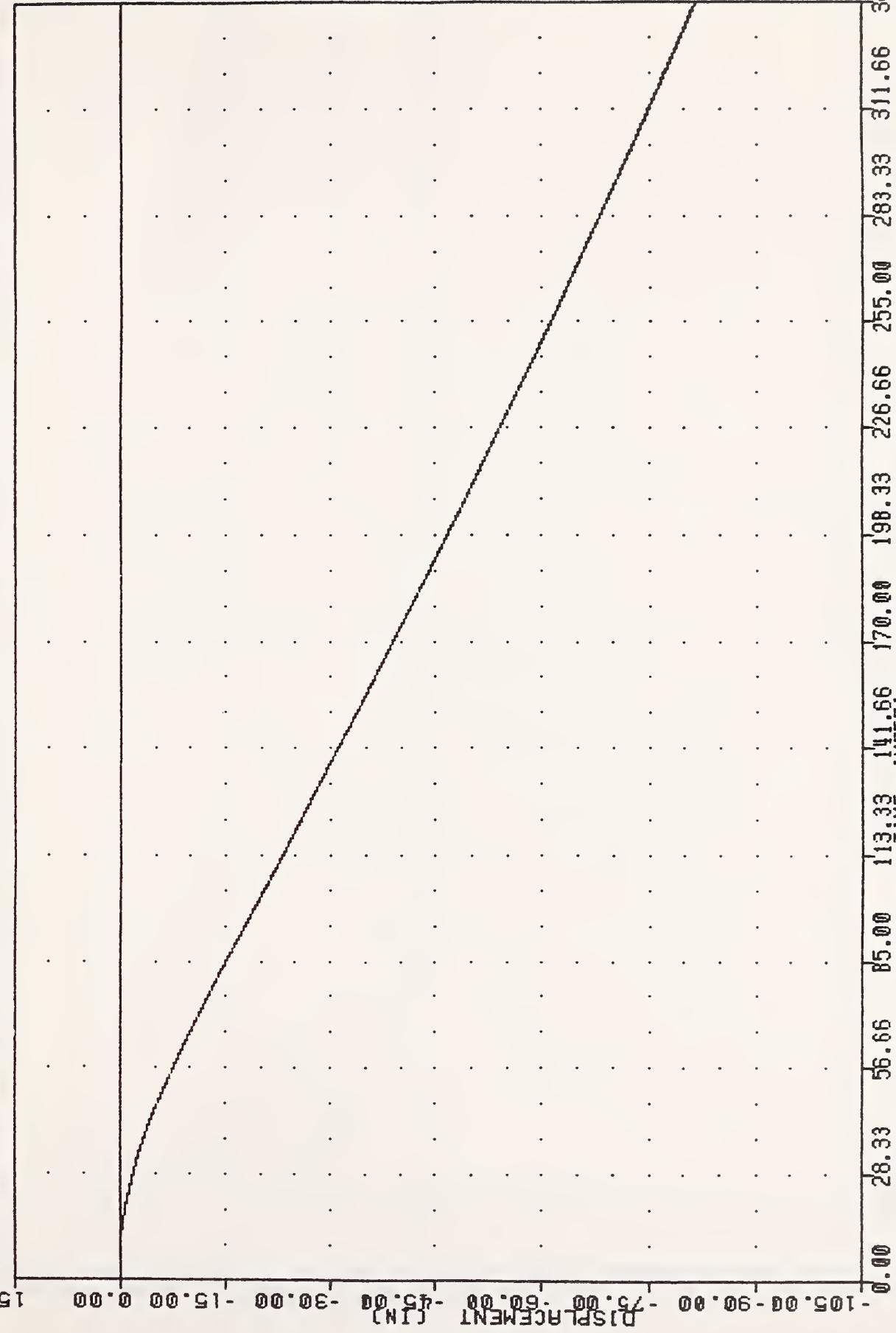
VRTC-2 '890302-2
CRASH III DAMAGE ALGORITHM
89061
RFSYV

FILTER = ALPF 1650/ 5214/ -40
MIN, MAX VALUES = -16.128 104.38 , 0.01 & 2.38



VRIC-2
CRASH III DAMAGE ALGORITHM
89061
RFSYD

FILTER = FLPF 1650/ 5214/-40
MIN, MAX VALUES = -81.600 340.00 . 0.00 e 3.00



CONToured MOVING BAR. INTO 90 DEG 1985 CHRYSLER LEBARON AT 30.0 MPH x2
RIGHT FRONT SILL Y AXIS DISPLACEMENT

YRTC-2 890302-2
CRASH III DAMAGE ALGORITHM
89061
ARSY6

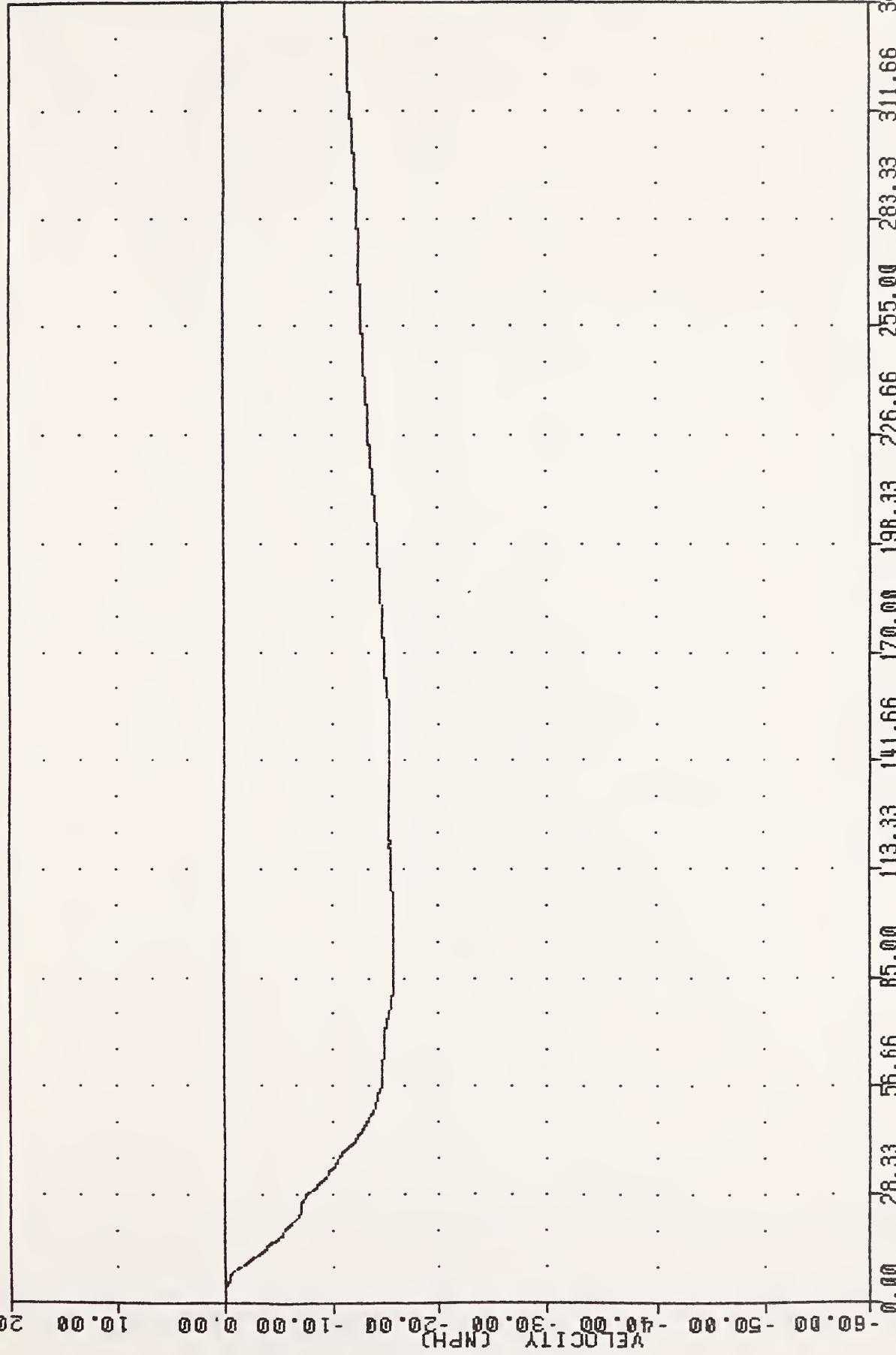
FILTER = BLPF 100/ 250/ -16
MIN. MAX VALUES = -23.558 10.63 , 1.89 e 160.63

-40.00 -30.00 -20.00 -10.00 10.00 20.00 30.00 40.00
ACCELERATION G. (G)

-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
TIME (SEC)
CONTOURED MOVING BAR. INTO 90 DEG 1985 CHRYSLER LEBARON AT 30.0 MPH x 2
RIGHT REAR SILL Y AXIS ACCELERATION

VRIC-2 , 890302-2
CRASH III DAMAGE ALGORITHM
89061
ARRSY

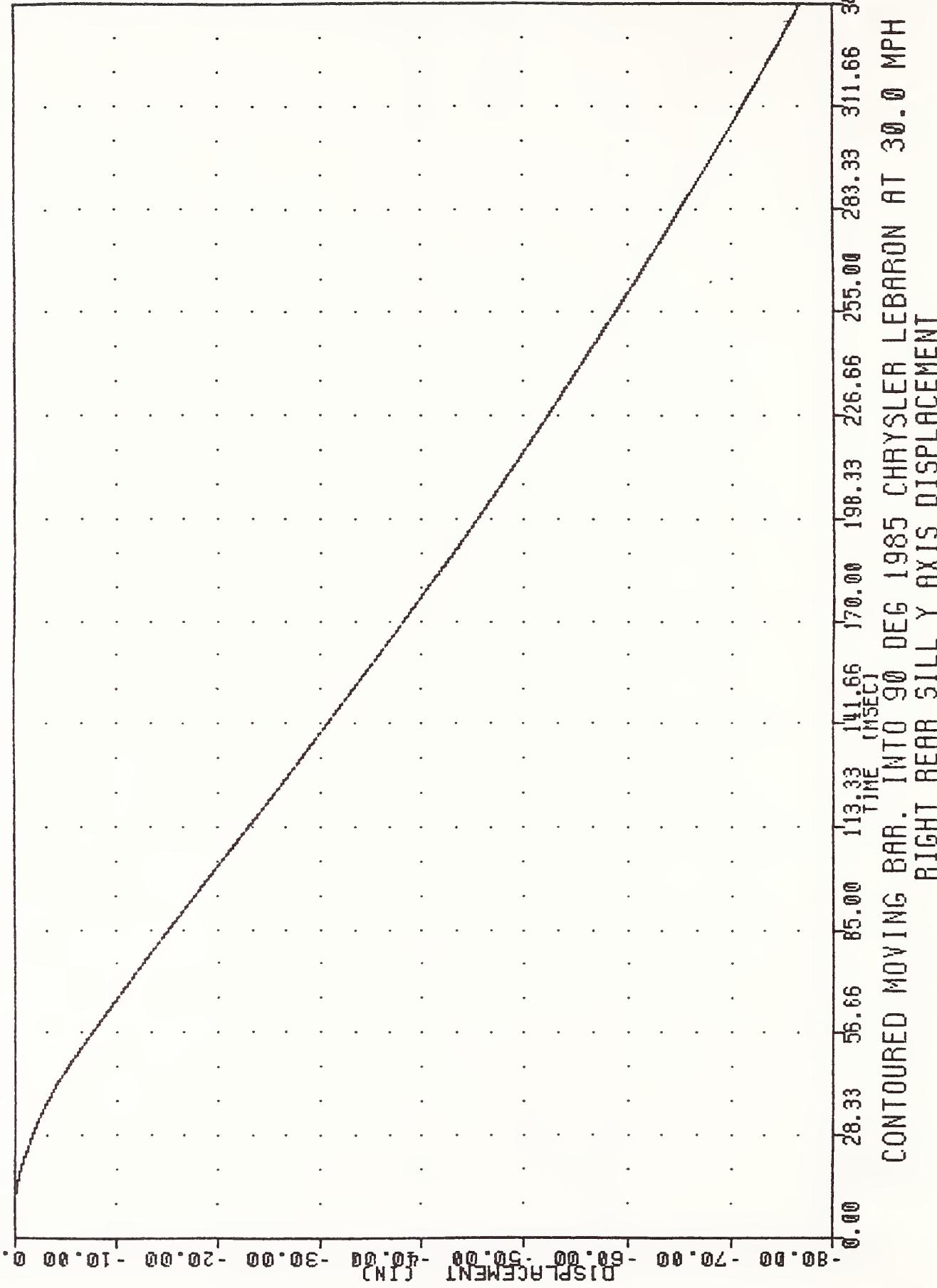
FILTER = ALFF 1650/ 5214/ -40
MIN, MAX VALUES = -15.808 89.75 , 0.01 & 1.25



CONToured moving bar. into 90 deg 1985 CHRYSLER LEBARON AT 30.0 MPH x2
RIGHT REAR SILL Y AXIS VELOCITY

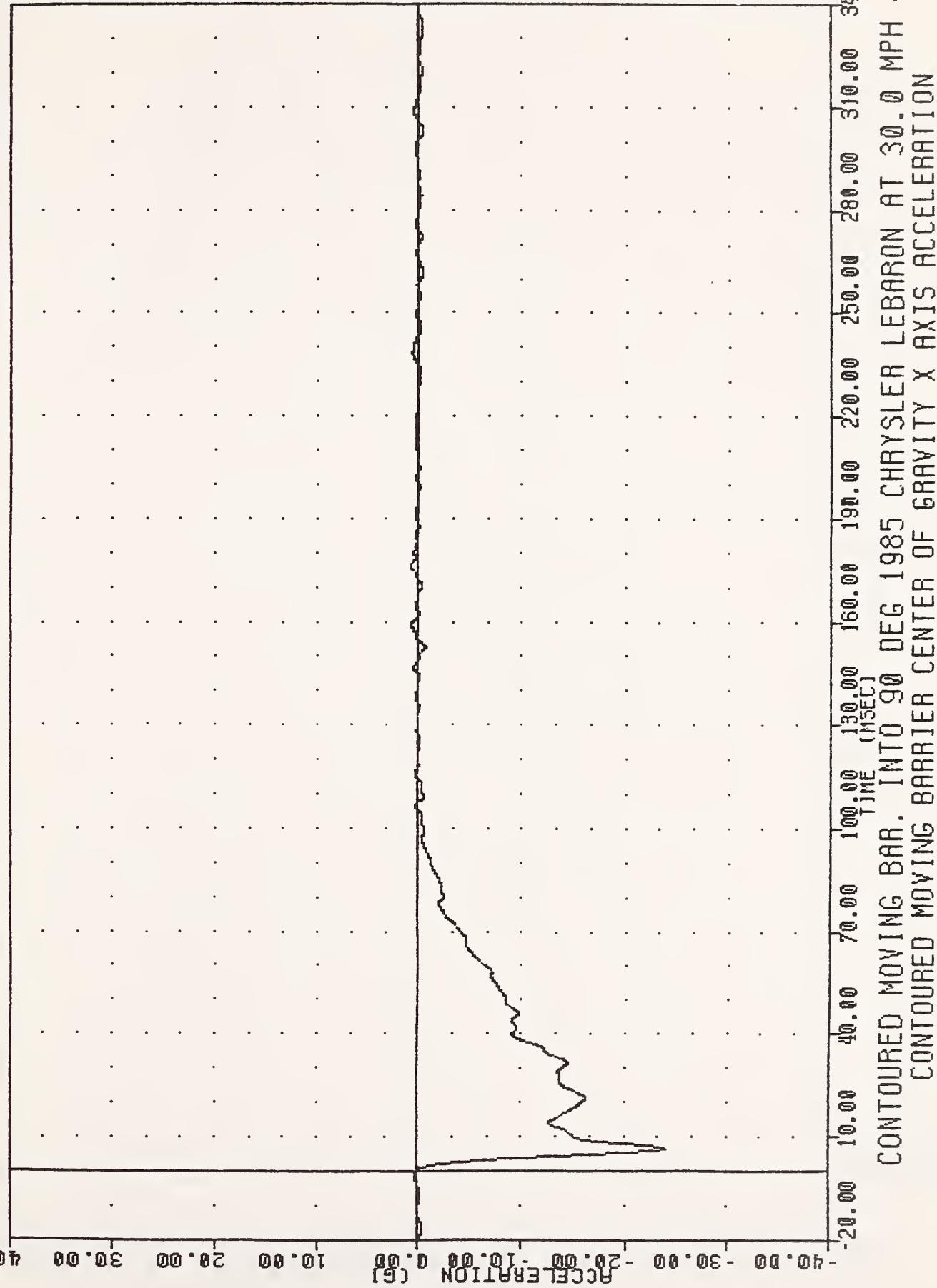
YRTC-2 * 890302-2
CRASH III DAMAGE ALGORITHM
89061
R8SYD

FILTER = ALPF 1650/ 5214/-40
MIN, MAX VALUES = -76.848 340.00 .
0.00 0 1.88



YRTC-2 890302-2
CRASH III DAMAGE ALGORITHM
89061
BCGXG

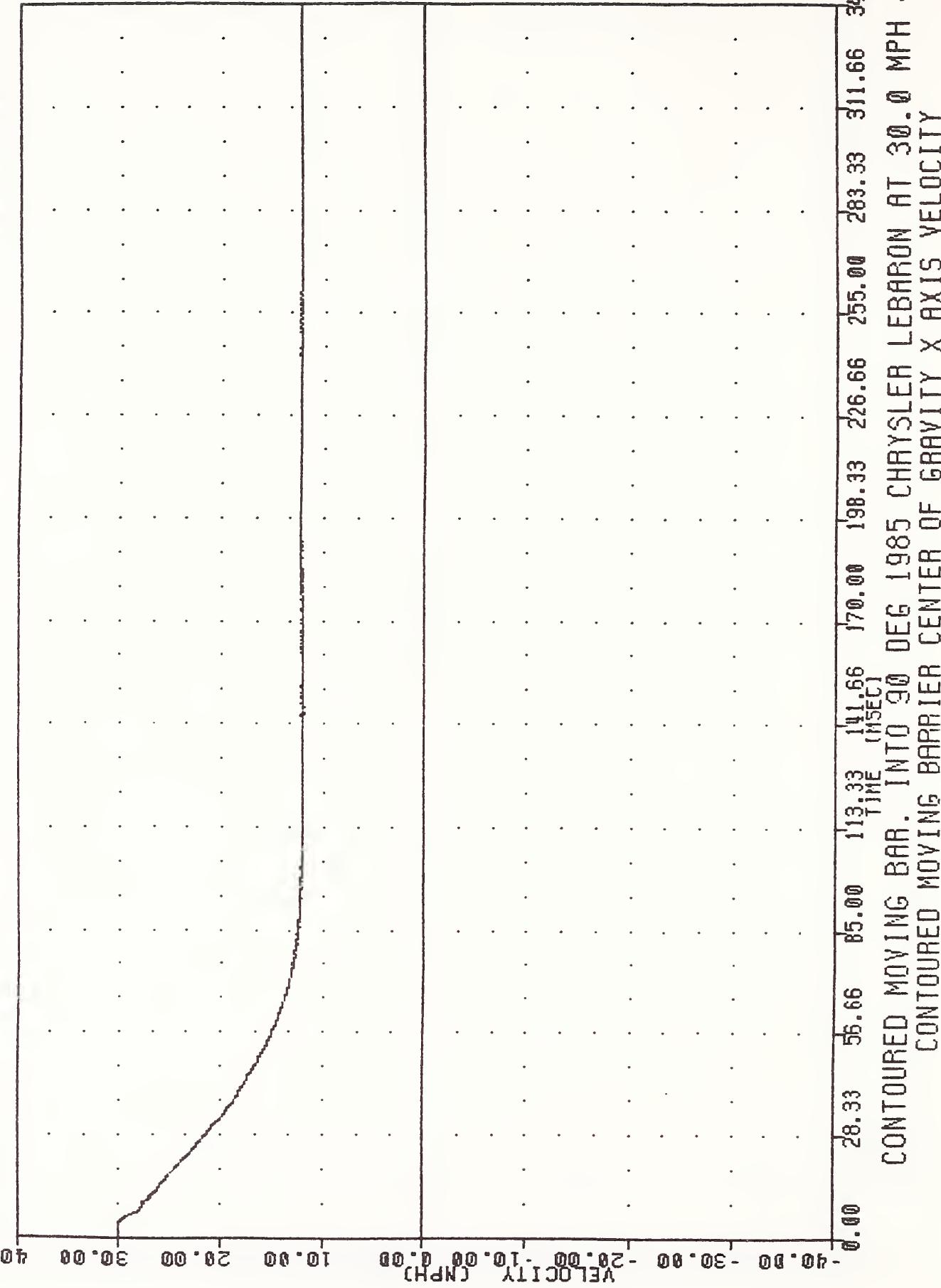
FILTER = BLPP 100/ 250/-16
MIN. MAX VALUES = -24.048 6.38 , 0.71 & 175.88



INTO 90 DEG 1985 CHRYSLER LEBARON AT 30.0 MPH x2
CONTOURED MOVING BARRIER CENTER OF GRAVITY X AXIS ACCELERATION

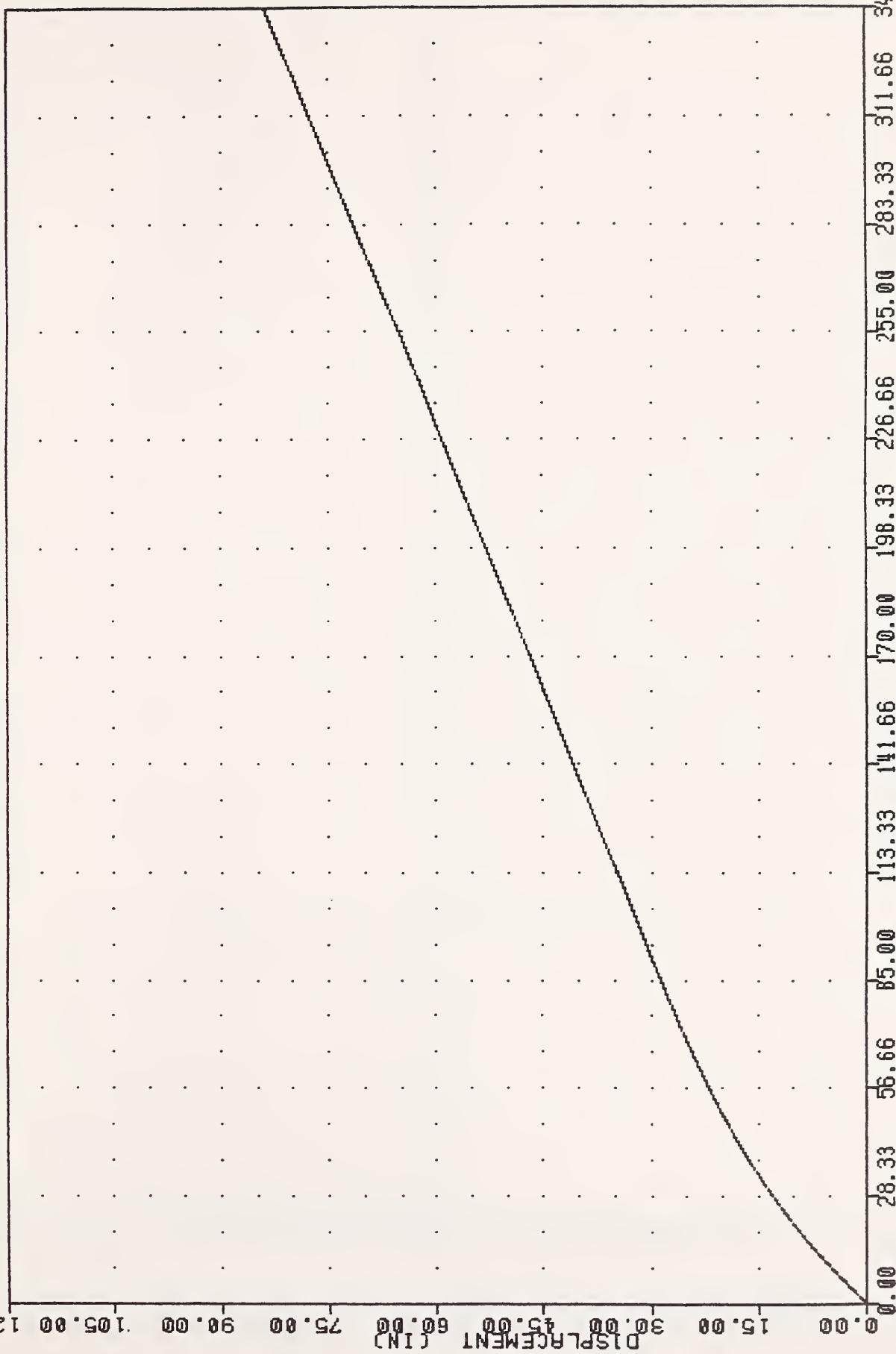
WTTC-2
CRASH III DAMAGE ALGORITHM
89061
BCGXY

FILTER = ALPF 1650/ 5214/ -40
MIN, MAX VALUES = 12.000 145.00 . 30.01 0 . 0.50



VRTC-2 , 890302-2
CRASH III DAMAGE ALGORITHM
89061
BGDXD

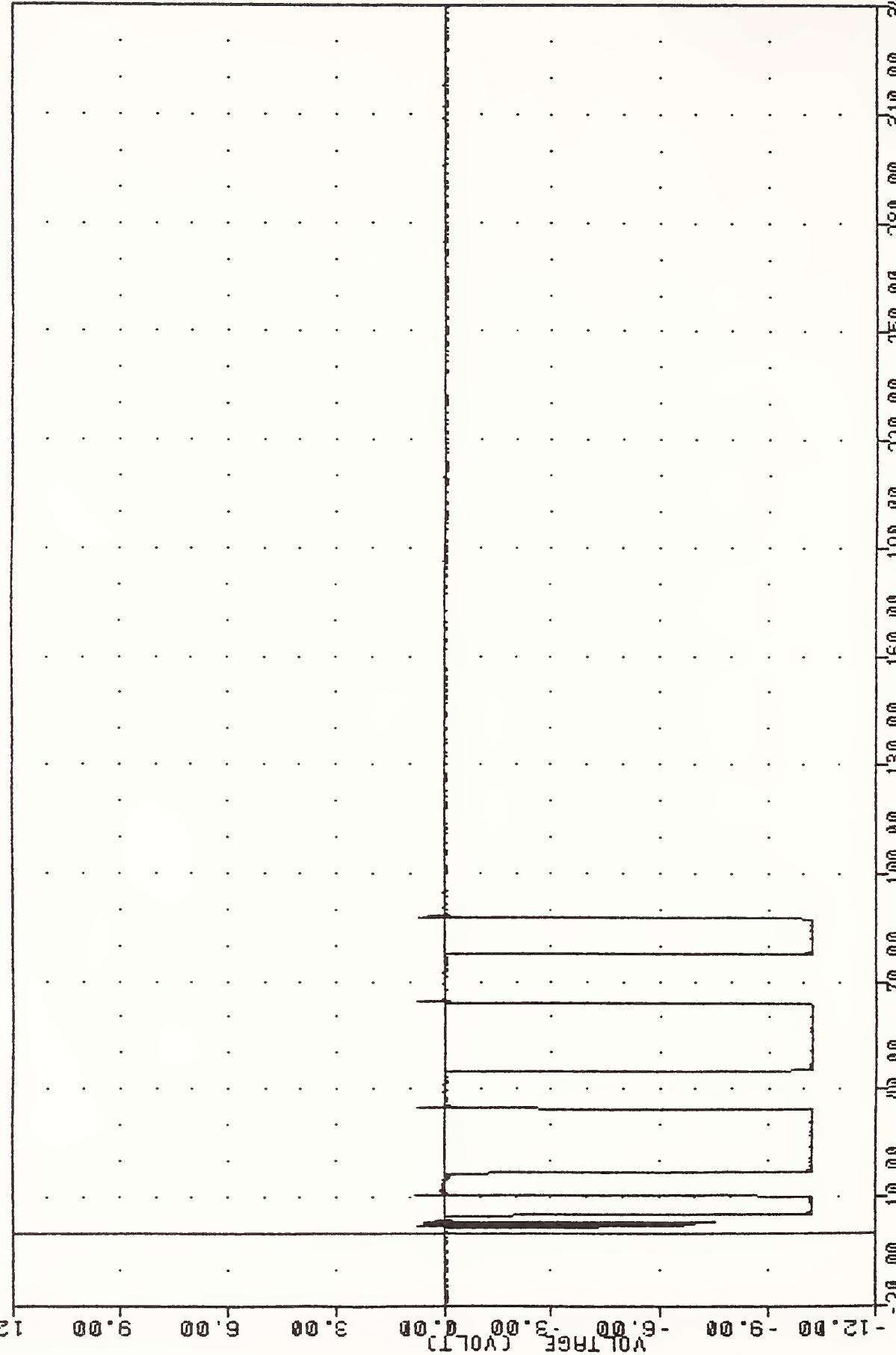
FILTER = ALPF 1650/ 5214/ -40
MIN, MAX VALUES = 0.00 0.00
63.88 0 340.00



CONToured moving bar. INTO 90 DEG 1985 CHRYSLER LEBARON AT 30.0 MPH x 2
CONToured moving barrier center of gravity x axis displacement

VRTC-2 890302-2
CRASH III DAMAGE ALGORITHM
89061
DTTH1
DO

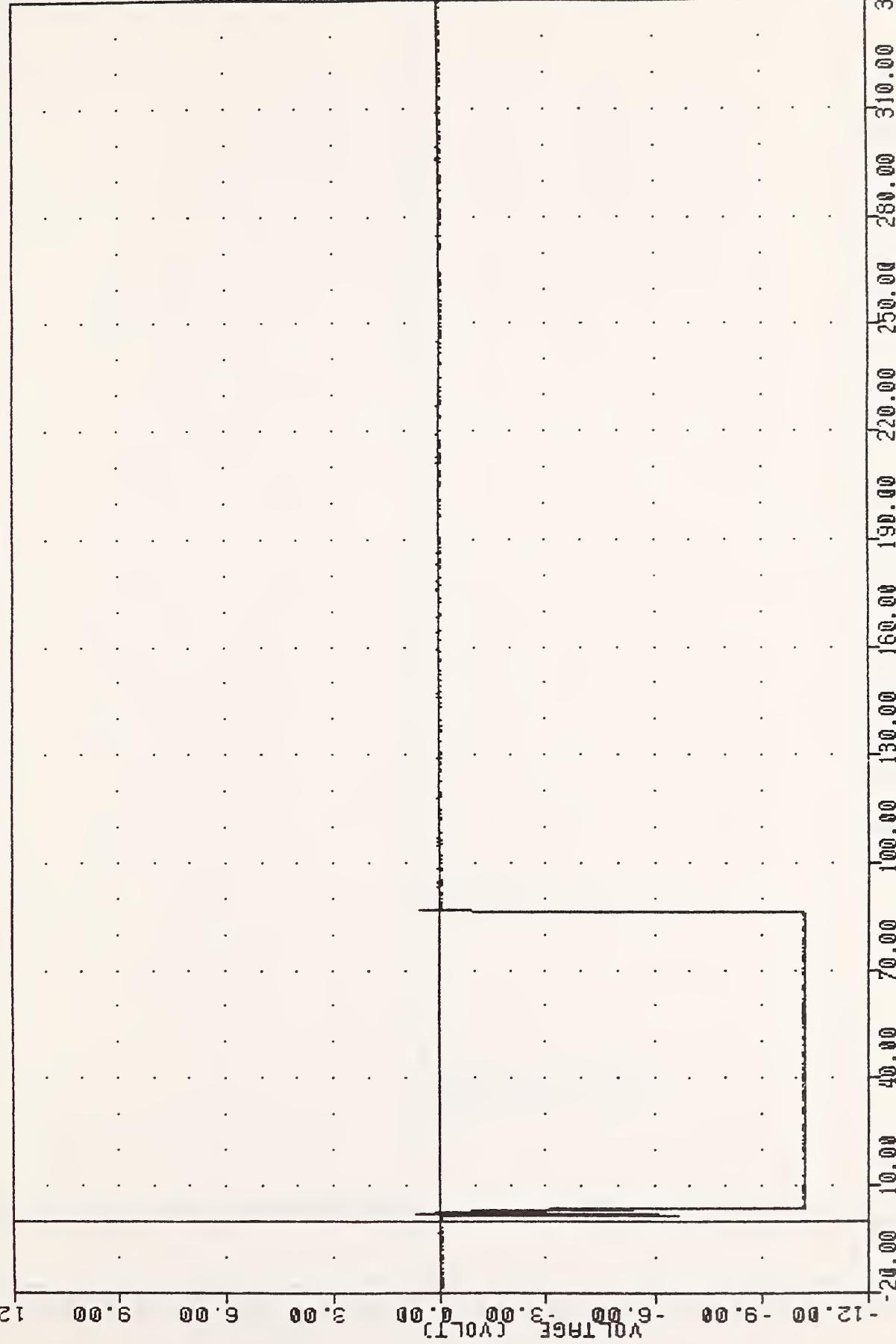
FILTER = ALFF 1650/ 5214/ -40
MIN, MAX VALUES = -10.228 5.25 , 0.86 & 10.50



CONToured moving bar. INTO 90 DEG 1985 CHRYSLER LEBARON AT 30.0 MPH x2
BARRIER CONTRACT SWITCH - LEFT

VRIC-2 , 890302-2
CRASH III DAMAGE ALGORITHM
89061
0TH2

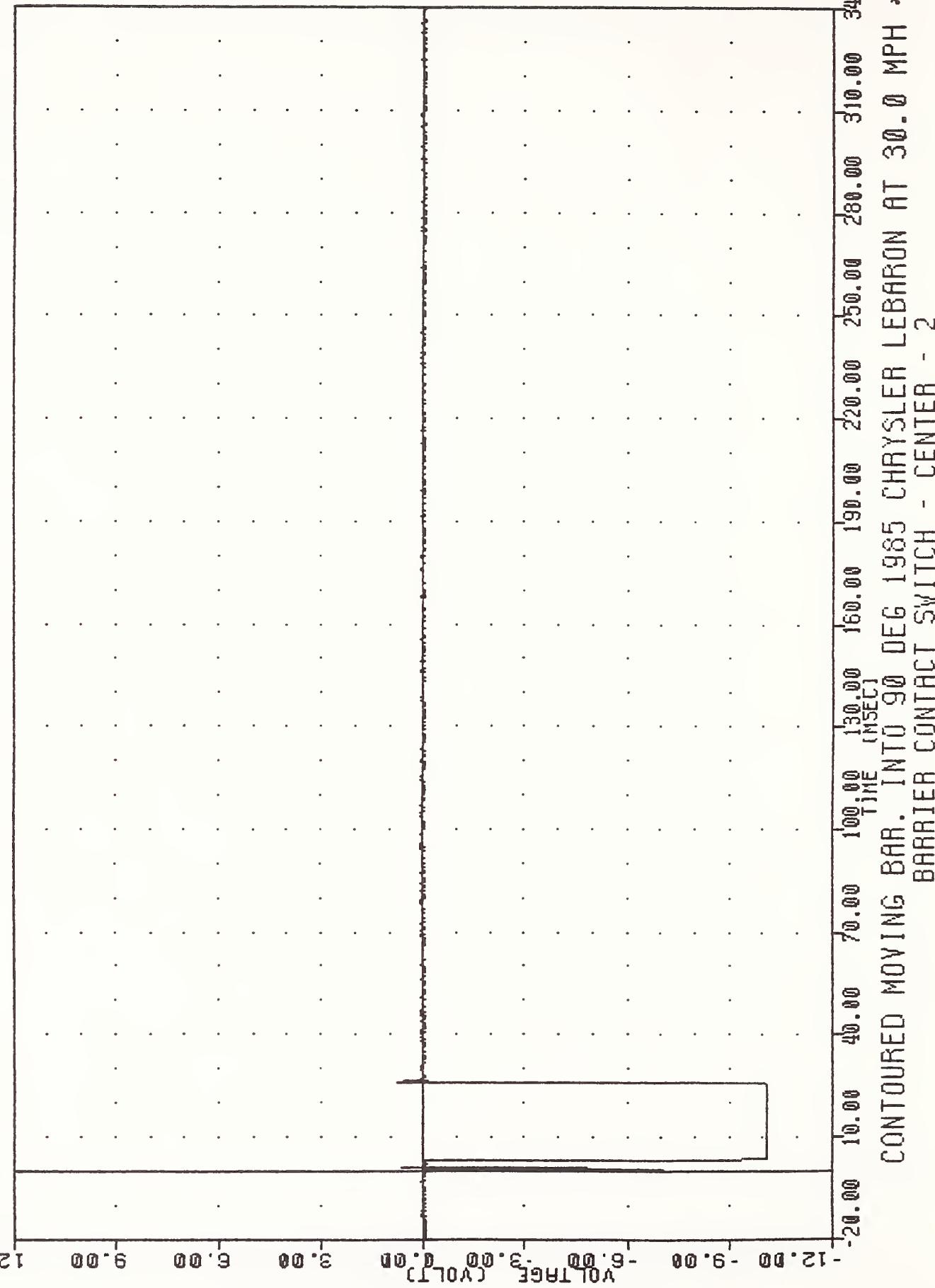
FILTER = HLPF 1650/ 5214/ -40
MIN. MAX VALUES = -10.258 3.63 , 0.70 & 2.13



CONToured moving bar. into 90 deg 1985 chrysler lebaron at 30.0 mph *2
barrier contact switch - center - 1

VRTC-2 '890302-2
CRASH IIII DAMAGE ALGORITHM
89061
0TH3

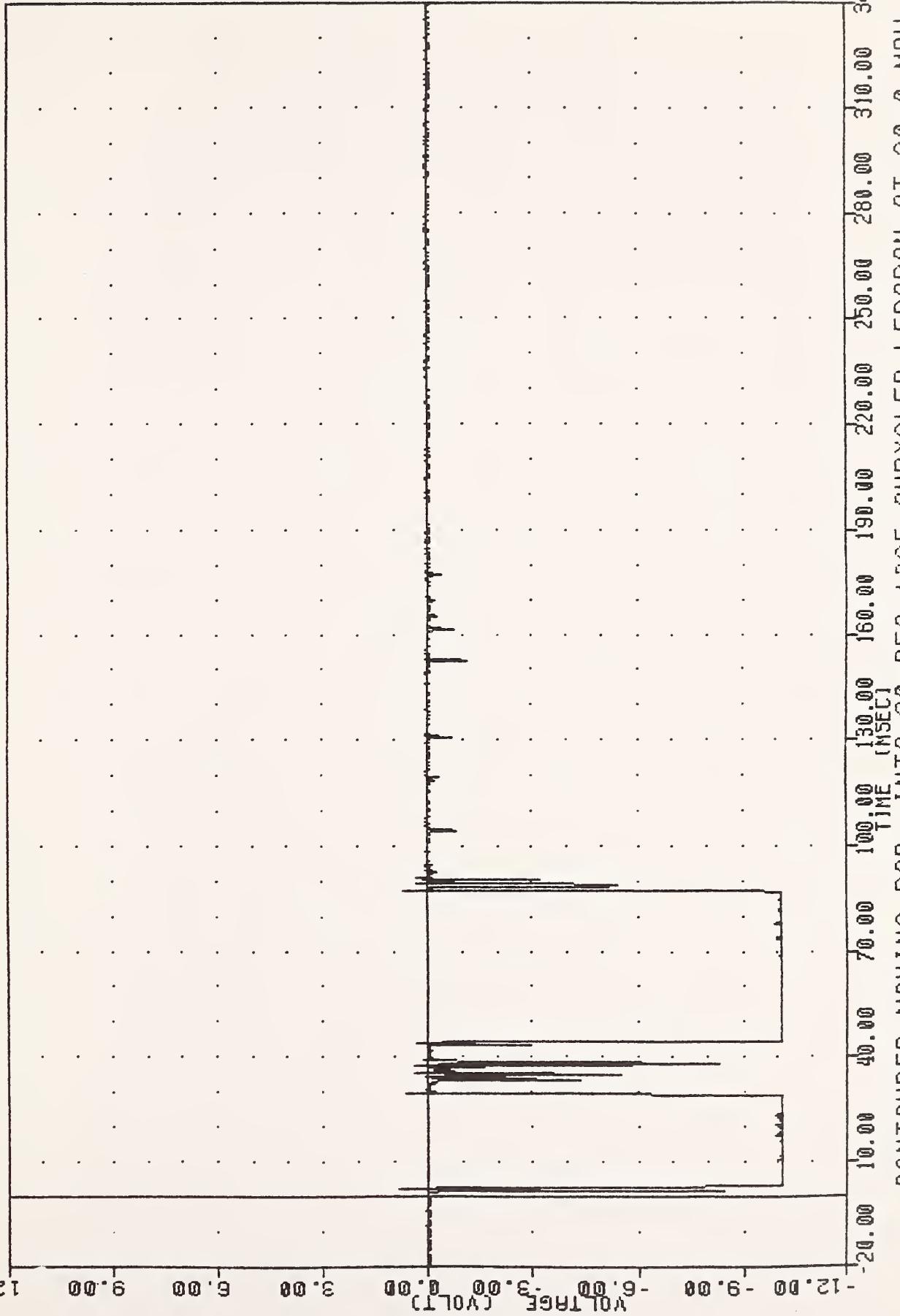
FILTER = ALPF 1650/ 5214/ -40
MIN, MAX VALUES = -10.078 3.38 , 0.77 & 26.00



CONToured moving bar. INTO 90 DEG 1985 CHRYSLER LEBARON AT 30.0 MPH x2
BARRIER CONTACT SWITCH - CENTER - 2

YRTC-2 890302-2
CRASH III DAMAGE ALGORITHM
89061
0TH4

FILTER = RLFF 1650/ 5214/-40
MIN. MAX VALUES = -10.118 3.000
0.848 2.000

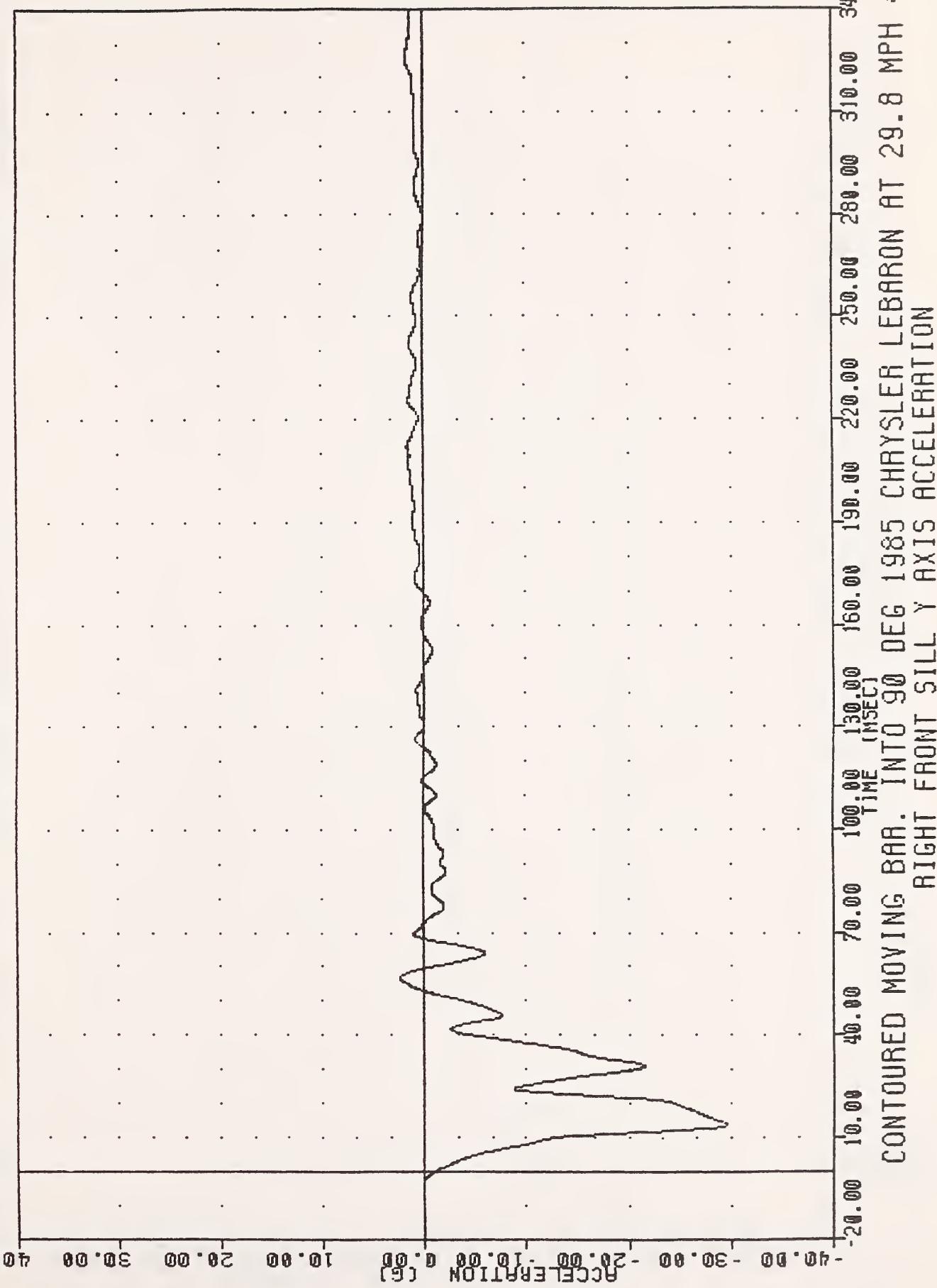


100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
TIME (SEC)
CONToured moving bar. INTO 90 DEG 1985 CHRYSLER LEBARON AT 30.0 MPH x2
BARRIER CONTACT SWITCH - RIGHT

TEST #890302-3

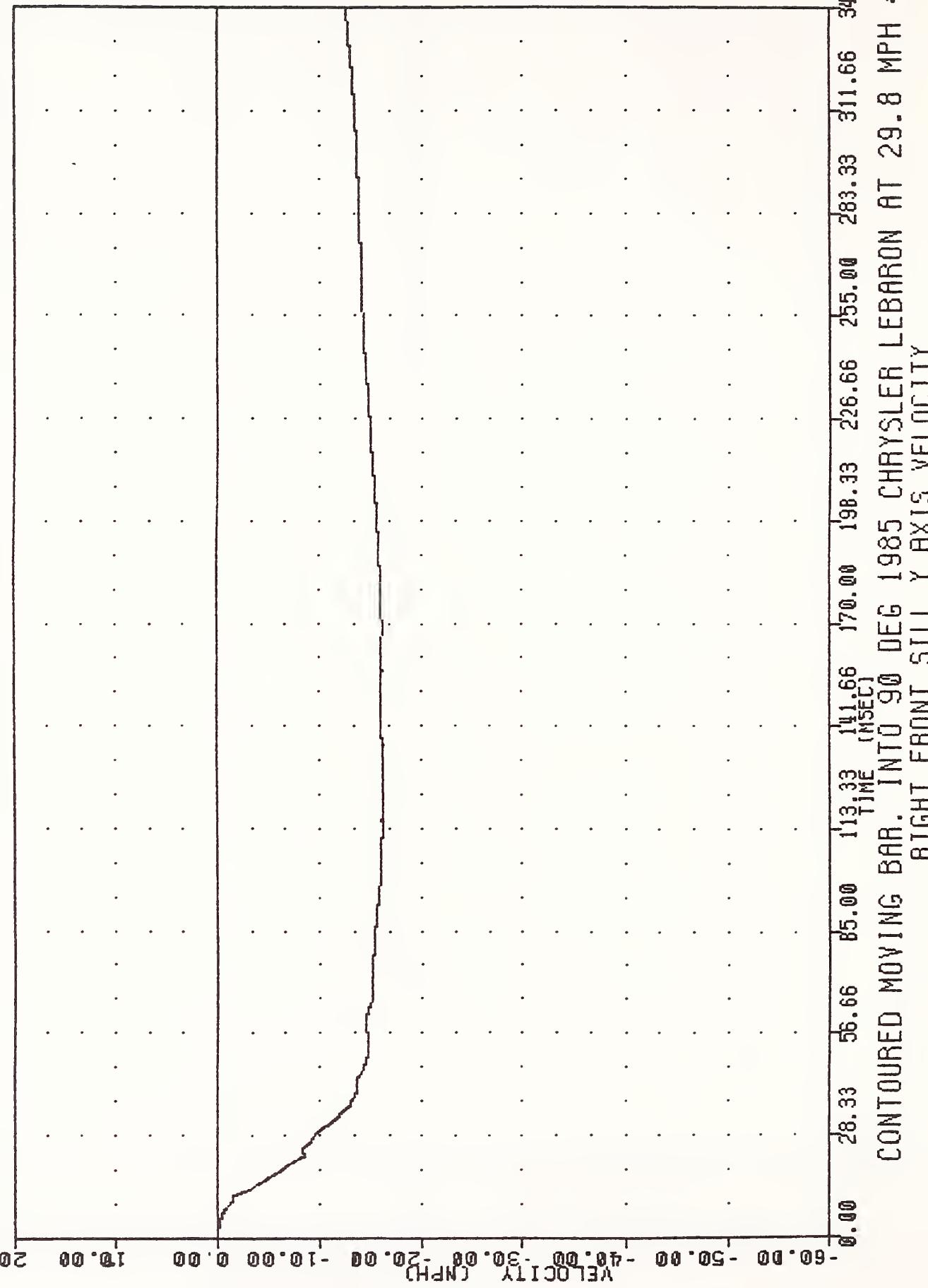
YRTC-3 '890302-3
CRASH III DAMAGE ALGORITHM
89061
RFSYG

FILTER = BLPP 100/ 250/-16
MIN. MAX VALUES = -29.638 13.75
2.42 e 56.63



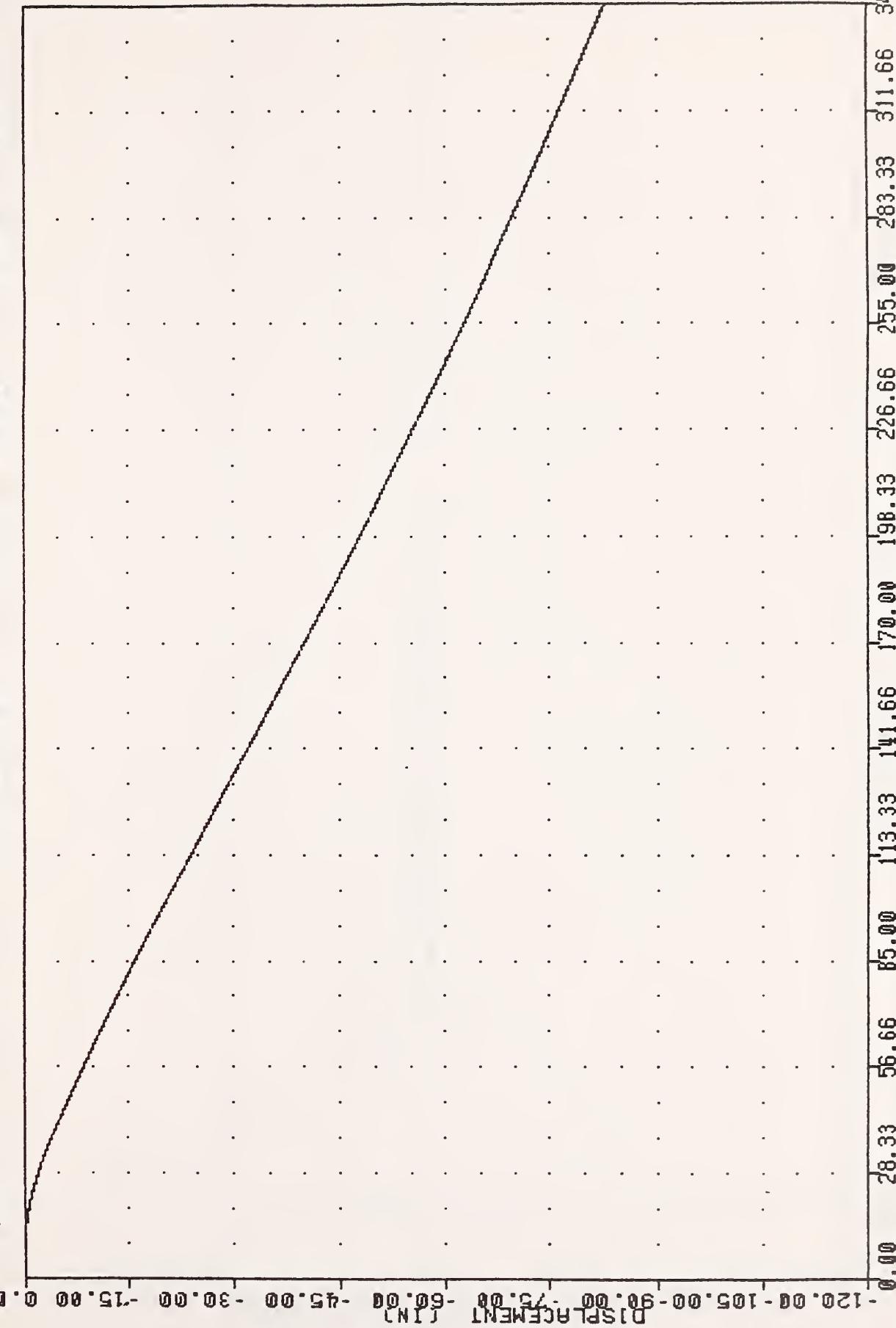
YRTC-3, 890302-3
CRASH III DAMAGE ALGORITHM
89061
RFSY

FILTER = ALPF 1650/ 5214/ -40
MIN. MAX VALUES = -16.198 124.63 , 0.00 & 0.00



VRIC-3 , 890302-3
CRASH III DAMAGE ALGORITHM
89061
AFSYD

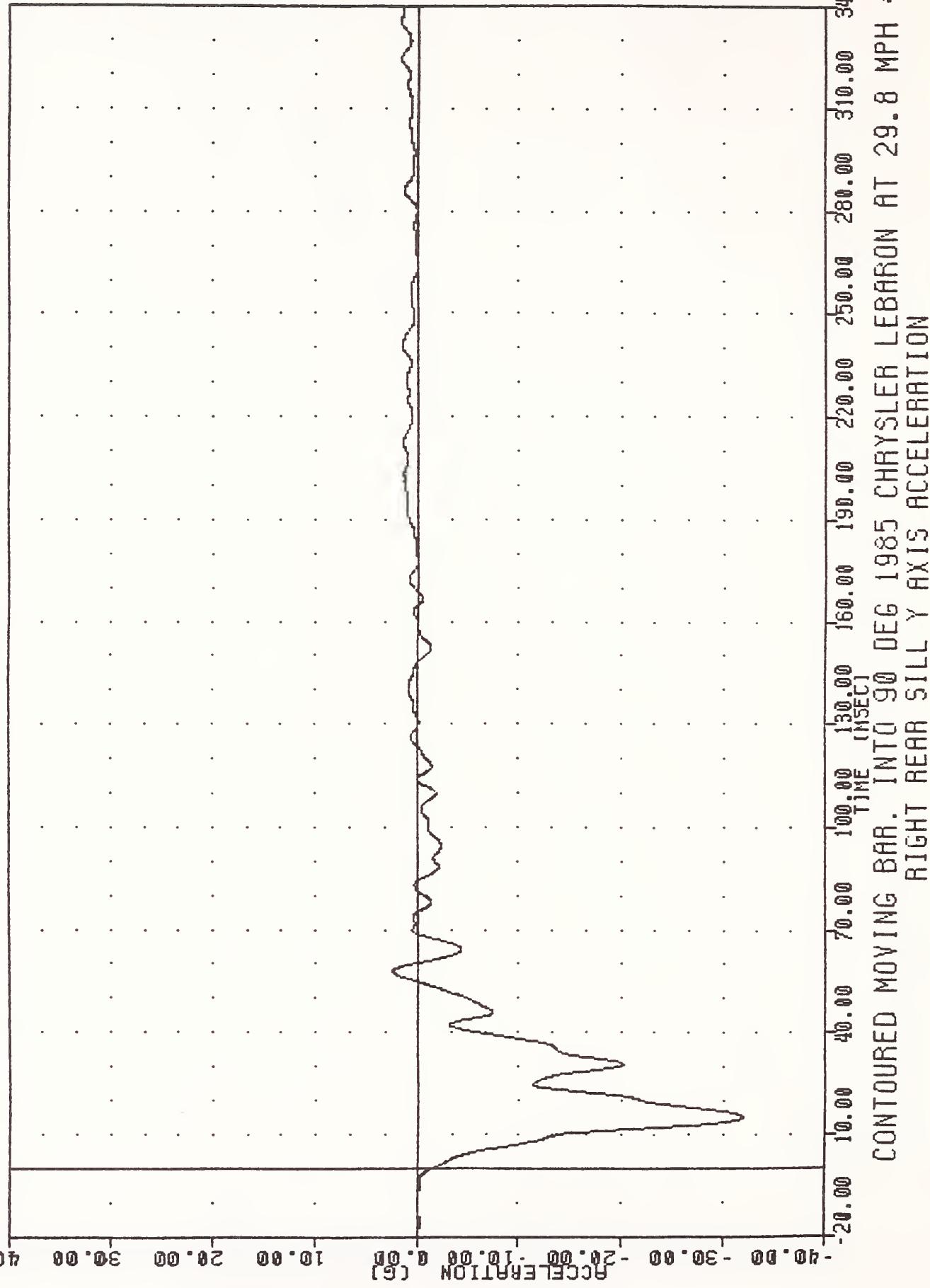
FILTER = ALPF 1650/ 5214/ -40
MIN. MAX VALUES = -62.798 340.00 ,
0.00 & 0.00



CONTOURED MOVING BAR. INTO 90 DEG 1985 CHRYSLER LEBARON AT 29.8 MPH x3
RIGHT FRONT SILL Y AXIS DISPLACEMENT

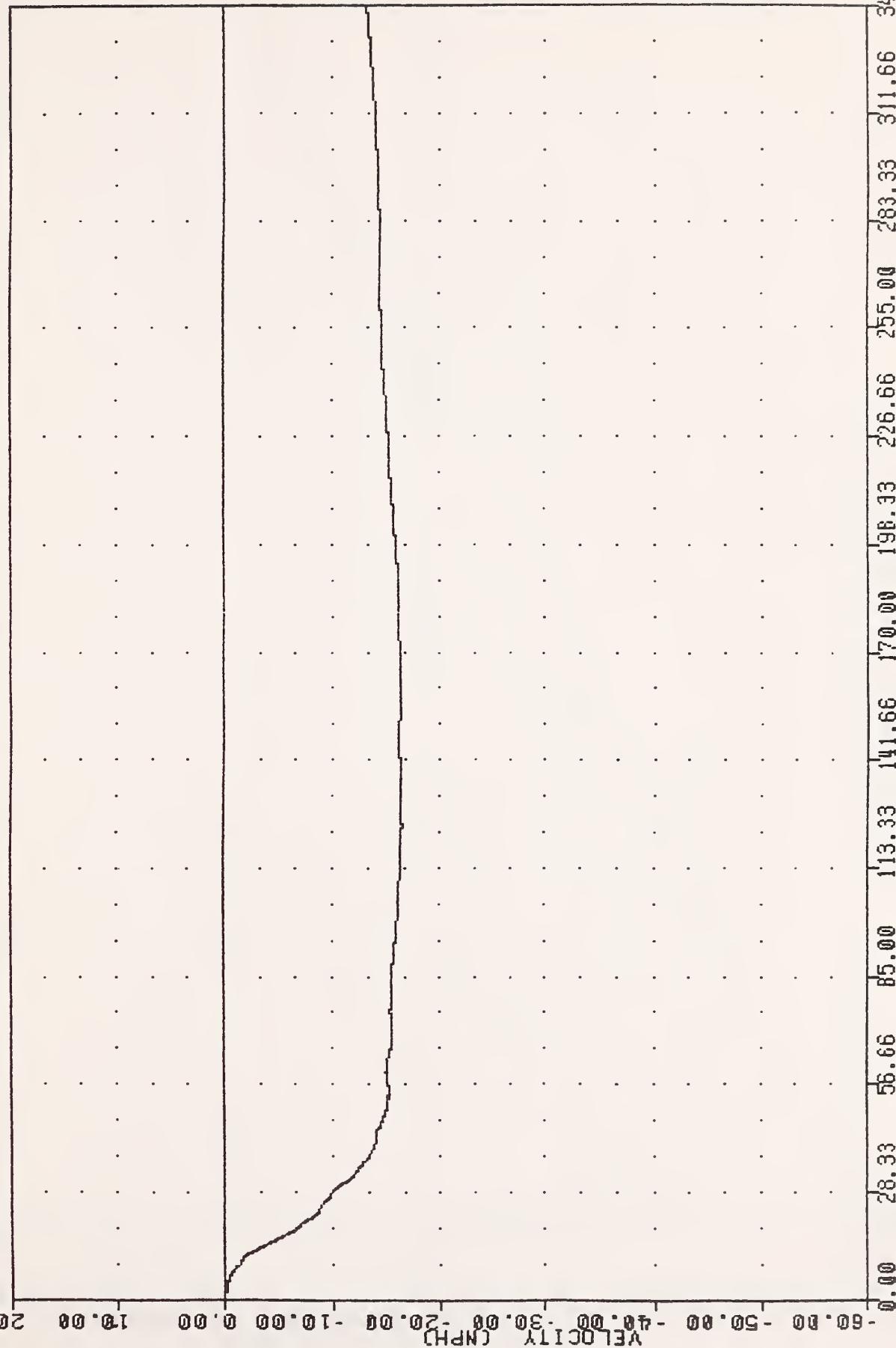
YRTC-3
CRASH III DAMAGE ALGORITHM
89061
89061
RSY6

FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -31.90 & 15.13 ,
2.52 & 57.88



VRTC-3 , 890302-3
CRASH III DAMAGE ALGORITHM
89061
ARSYV

FILTER = ALPF 1650/ 5214/ -40
MIN, MAX VALUES = -16.468 124.50 , 0.00 & 0.50

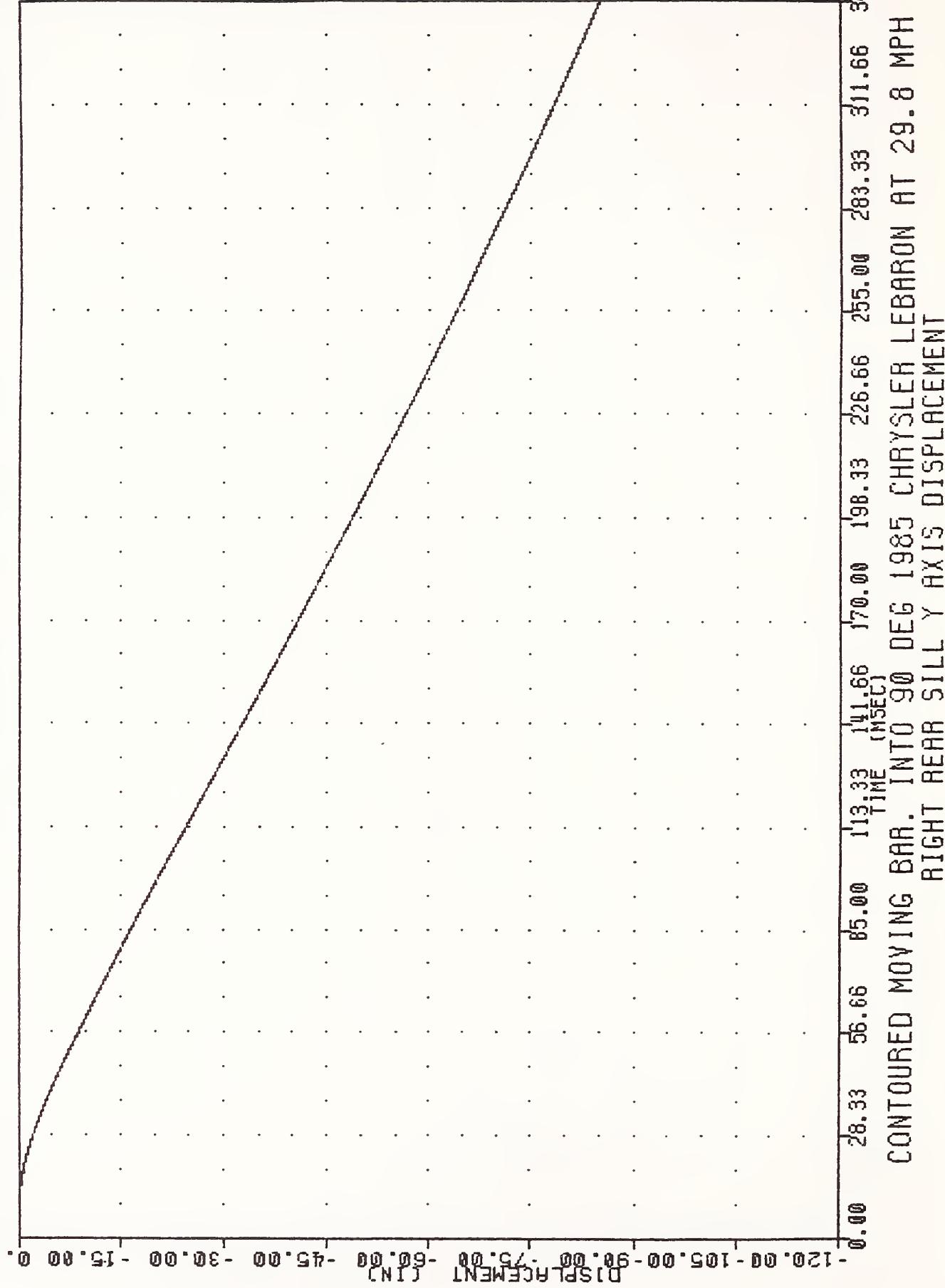


CONToured moving bar. INTO 90 DEG 1985 CHRYSLER LEBARON AT 29.8 MPH *3
RIGHT REAR SILL Y AXIS VELOCITY

VRTC-3 , 890302-3
CRASH III DAMAGE ALGORITHM
89061
ARSYD

FILTER = HLPF 1650/ 5214/-40
MIN. MAX VALUES = -85.078 340.00 . 0.00 & 0.00

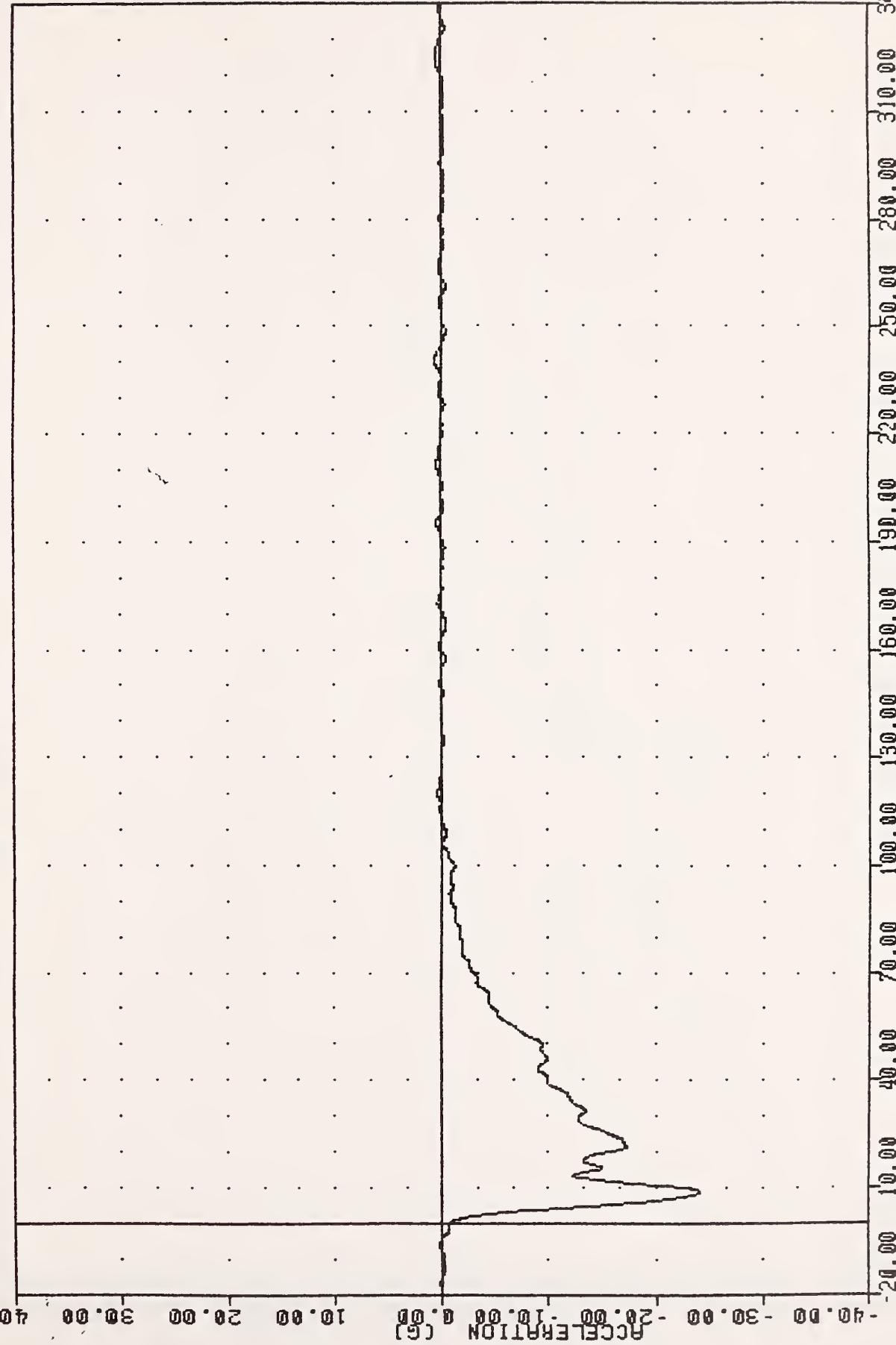
-120.00 -105.00 -90.00 -75.00 -60.00 -45.00 -30.00 -15.00 0.00



TIME (INSEC)
INTO 90 DEG 1985 CHRYSLER LEBARON AT 29.8 MPH x3
RIGHT REAR SILL Y AXIS DISPLACEMENT

VATC-3 , 890302-3
CRASH .III DAMAGE ALGORITHM
89061
BCGX6

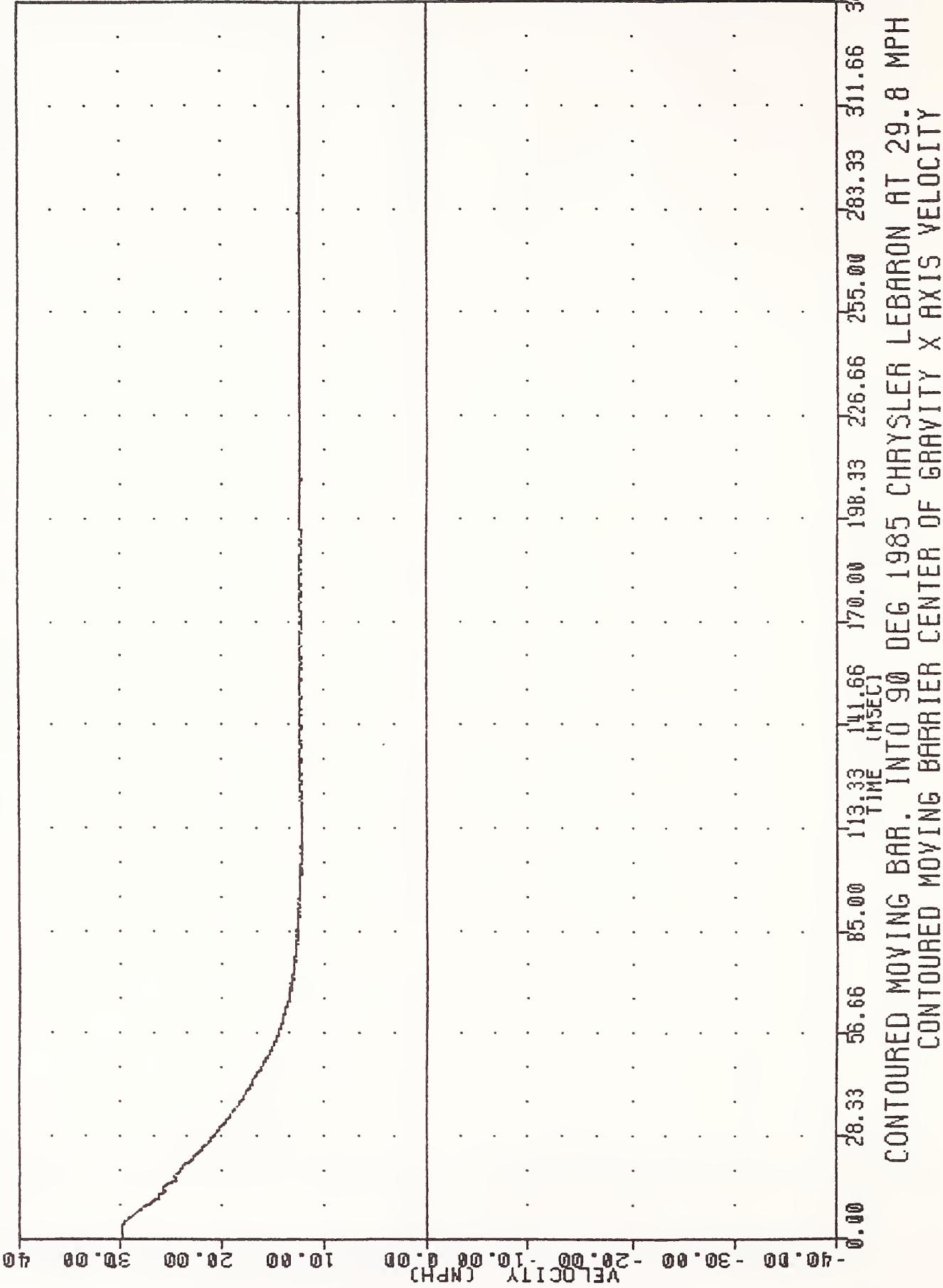
FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -24.188 8.75 ,
0.66 & 239.75



CONTOURED MOVING BAR. INTO 90 DEG 1985 CHRYSLER LEBARON AT 29.8 MPH x3
CONTOURED MOVING BARRIER CENTER OF GRAVITY X AXIS ACCELERATION

VRTC-3 890302-3
CRASH III DAMAGE ALGORITHM
89061
BUGGY

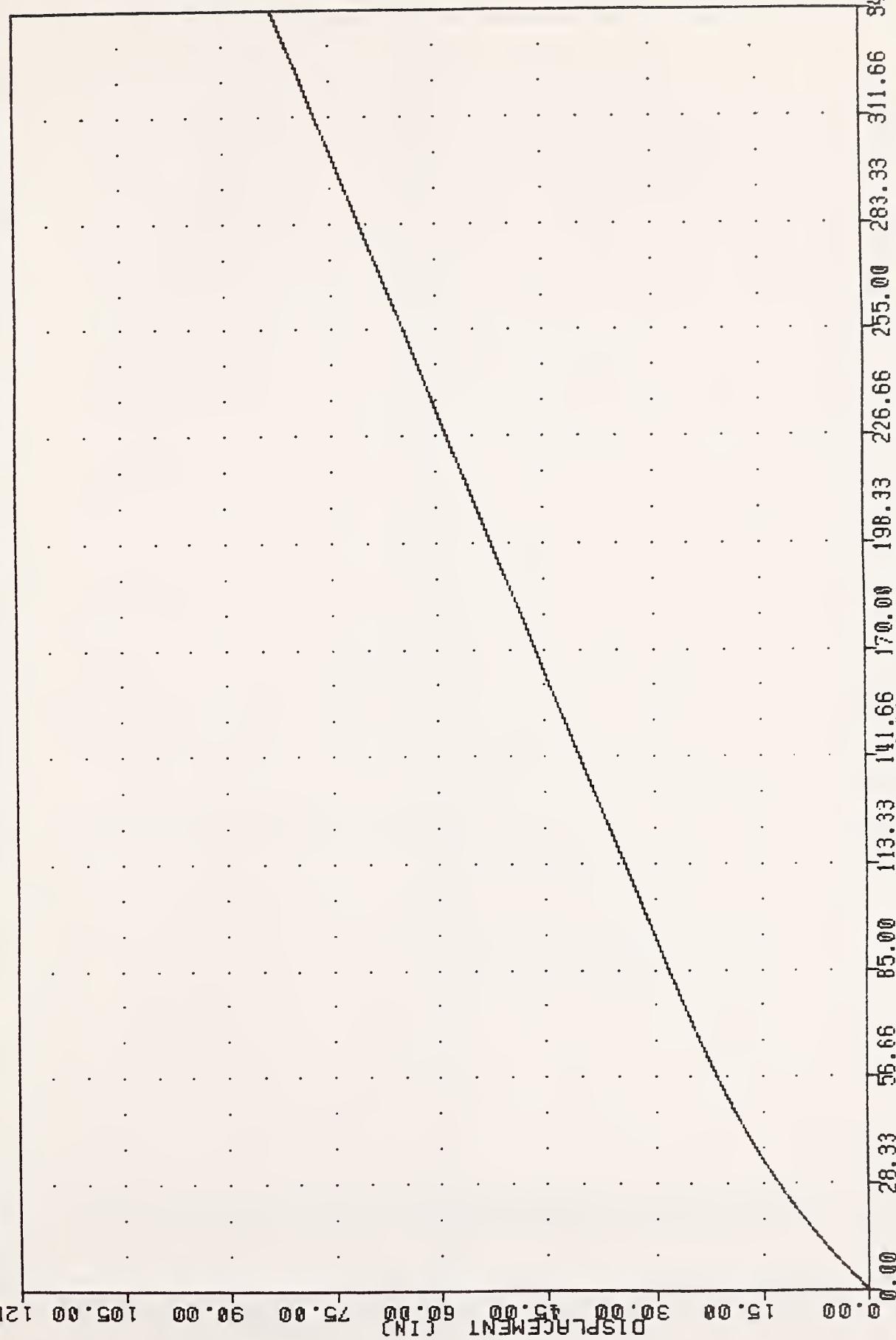
FILTER = ALPF 1650/ 5214/ -40
MIN, MAX VALUES = 12.128 114.631 29.818 0.88



VRIC-3 , 890302-3
CRASH III DAMAGE ALGORITHM
89061
BCGXD

FILTER = ALPF 1650/ 5214/-40
MIN, MAX VALUES = 0.000 0.000

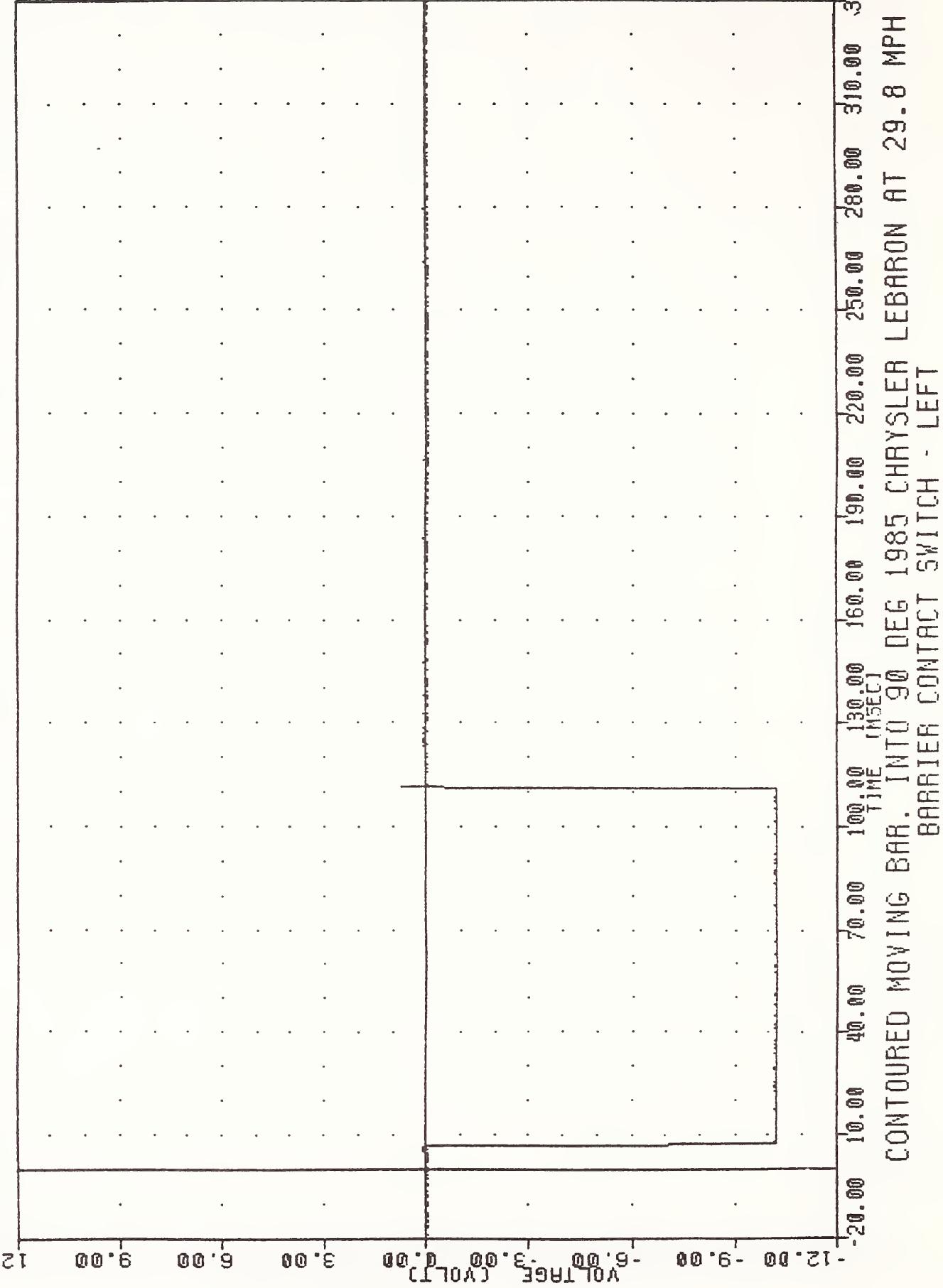
83.35 0 340.00



1985 CHRYSLER LEBARON AT 29.8 MPH x3
INTO 30 DEG CONTOURED MOVING BARRIER CENTER OF GRAVITY X AXIS DISPLACEMENT

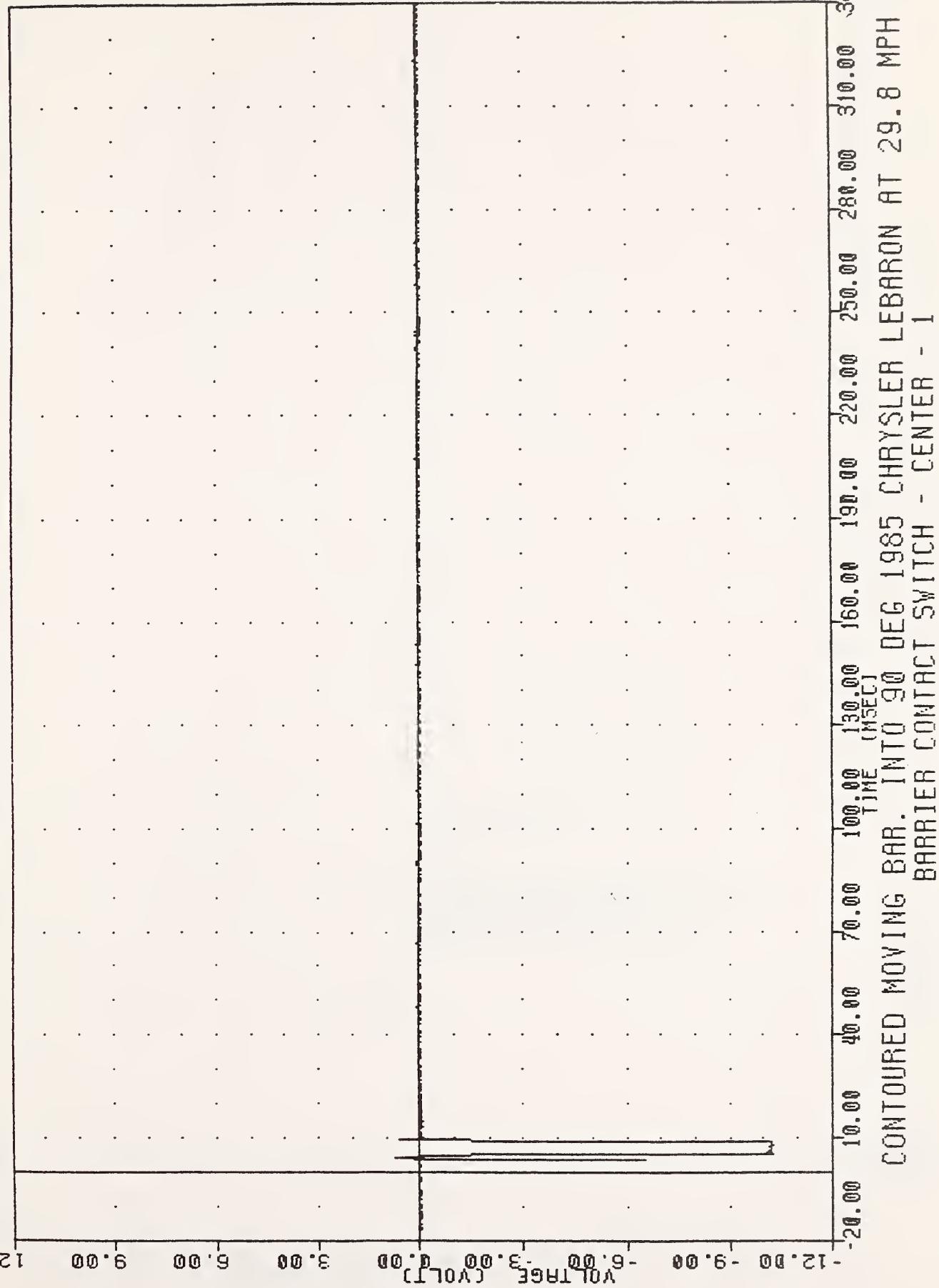
YRTC-3
CRASH III DAMAGE ALGORITHM
89061
0TH1

FILTER = ALPF 1650/ 5214/ -40
MIN, MAX VALUES = -10.228 7.25 , 0.70 & 111.38



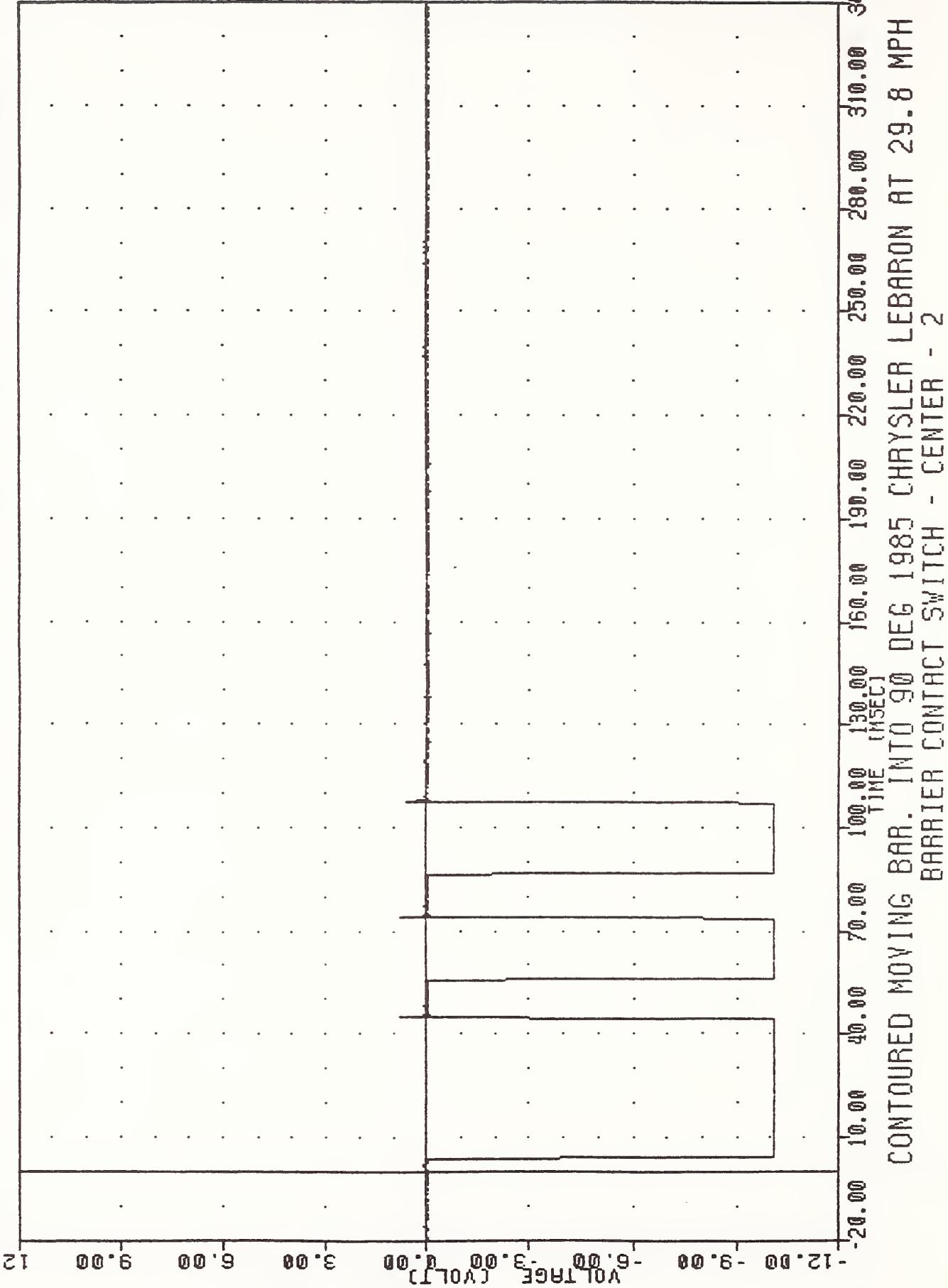
VRTC-3
CRASH III DAMAGE ALGORITHM
89061
0TH2

FILTER = RLFF 1650/ 5214/ -40
MIN, MAX VALUES = -10.288 5.25 ,
0.71 0 4.00



VRTC-3 890302-3
CRASH III DAMAGE ALGORITHM
89061 QTH3

FILTER = RLPF 1650/ 5214/ -40
MIN, MAX VALUES = -10.088 4.130 0.790 44.88

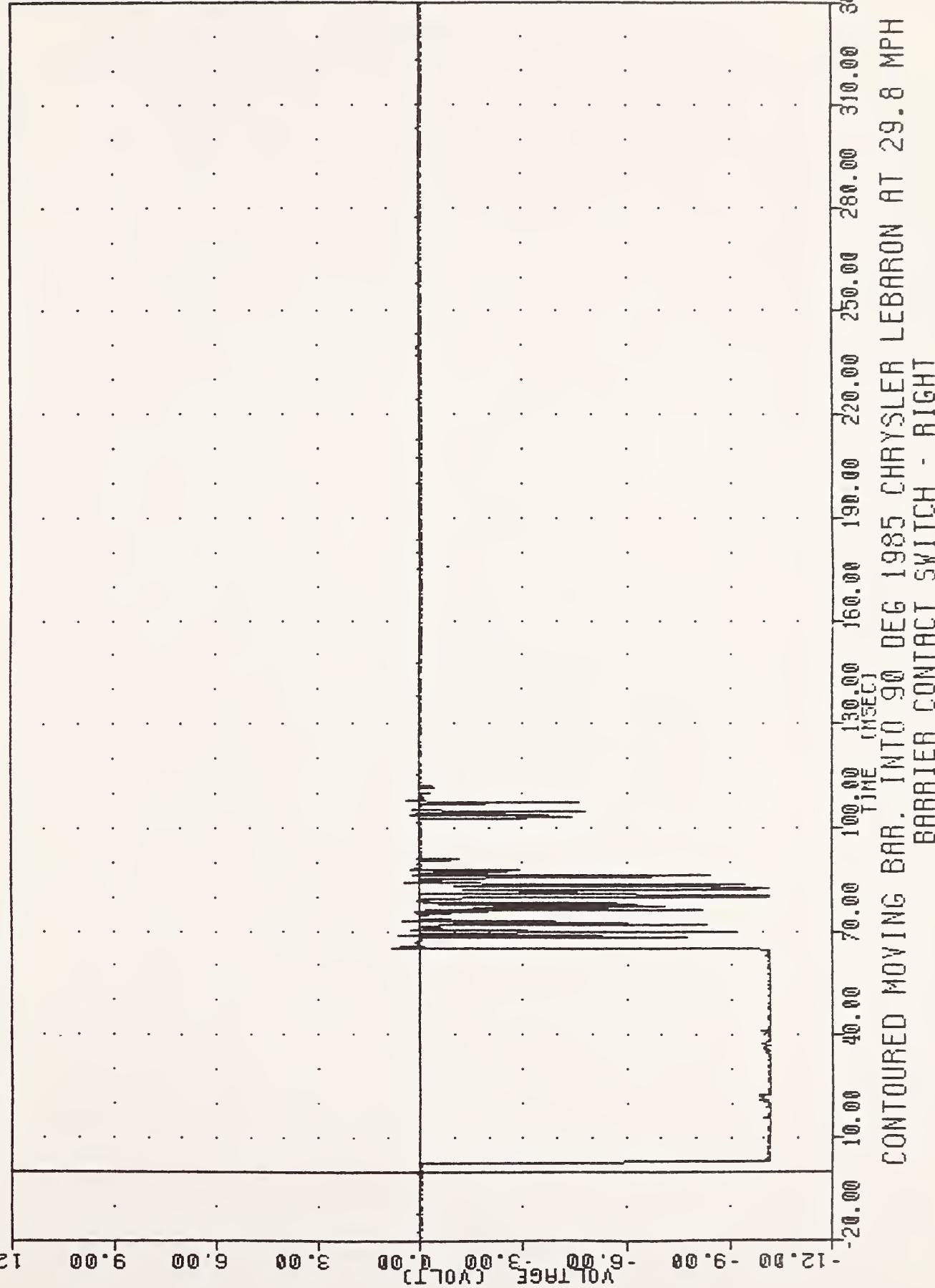


CONToured moving bar. INTO 90 DEG 1985 CHRYSLER LEBARON AT 29.8 MPH x3
BARRIER CONTACT SWITCH - CENTER - 2
-20.00 -10.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00 80.00 90.00 100.00 110.00 120.00 130.00 140.00 150.00 160.00 170.00 180.00 190.00 200.00 210.00 220.00 230.00 240.00 250.00 260.00 270.00 280.00 290.00 300.00 310.00 320.00 330.00 340.00
TIME [MSEC]

YRTC-3 , 890302-3
CRASH III DAMAGE ALGORITHM
89061
OTH4

FILTER = ALFF 1650/ 5214/-40
MIN, MAX VALUES = -10.148 3.00 ,

0.81 8 65.25



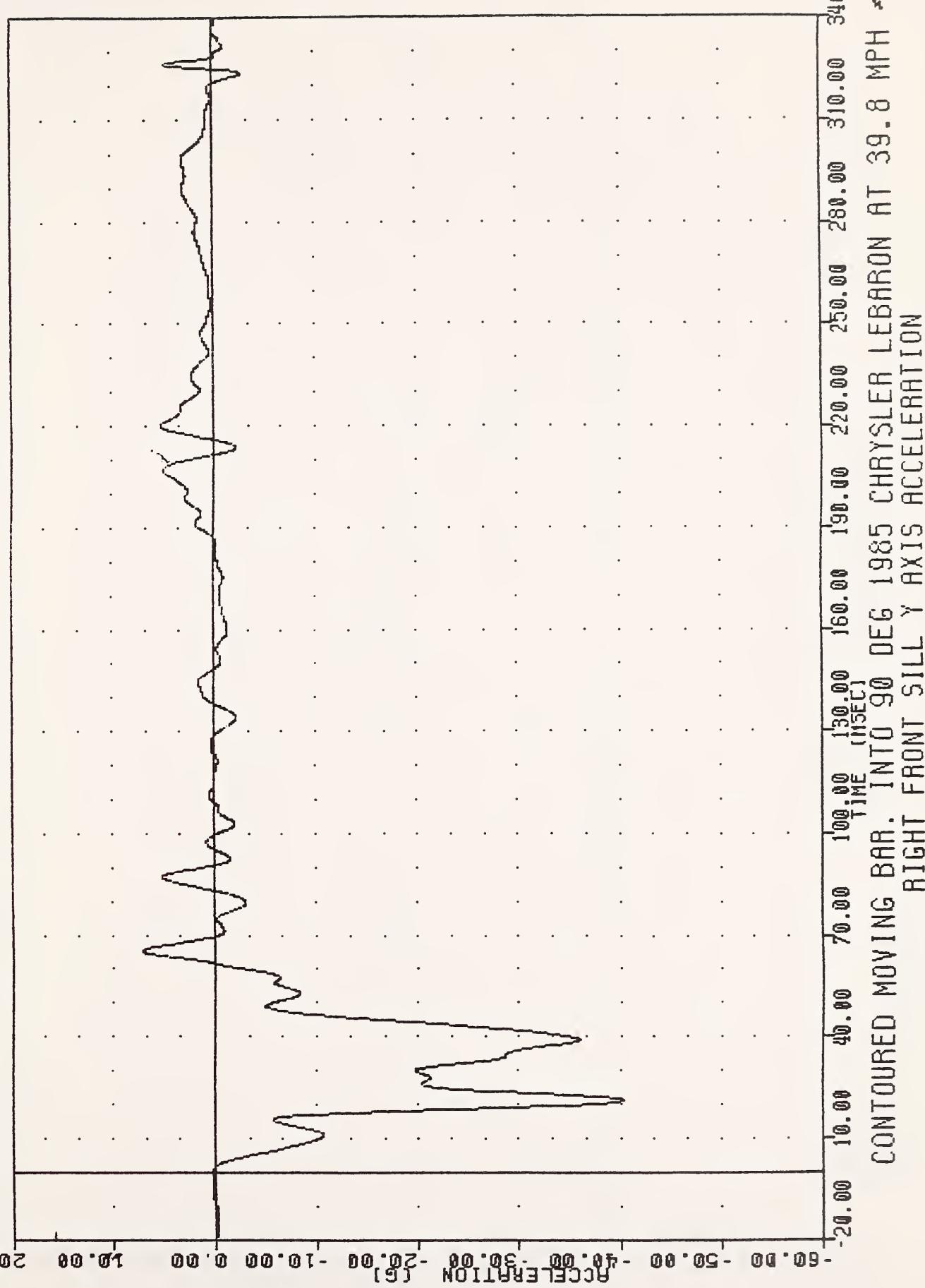
20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
TIME (MSEC)
CONToured moving bar. INTO 90 DEG 1985 CHRYSLER LEBRON AT 29.8 MPH x3
BARRIER CONTACT SWITCH - RIGHT

TEST #890302-4

WTTC-4
CRASH IIII DAMAGE ALGORITHM
89061
RFSYC

890302-4
FILTER = ELPP 100/ 250/-16
MIN. MAX VALUES = -40.278 21.13 ,

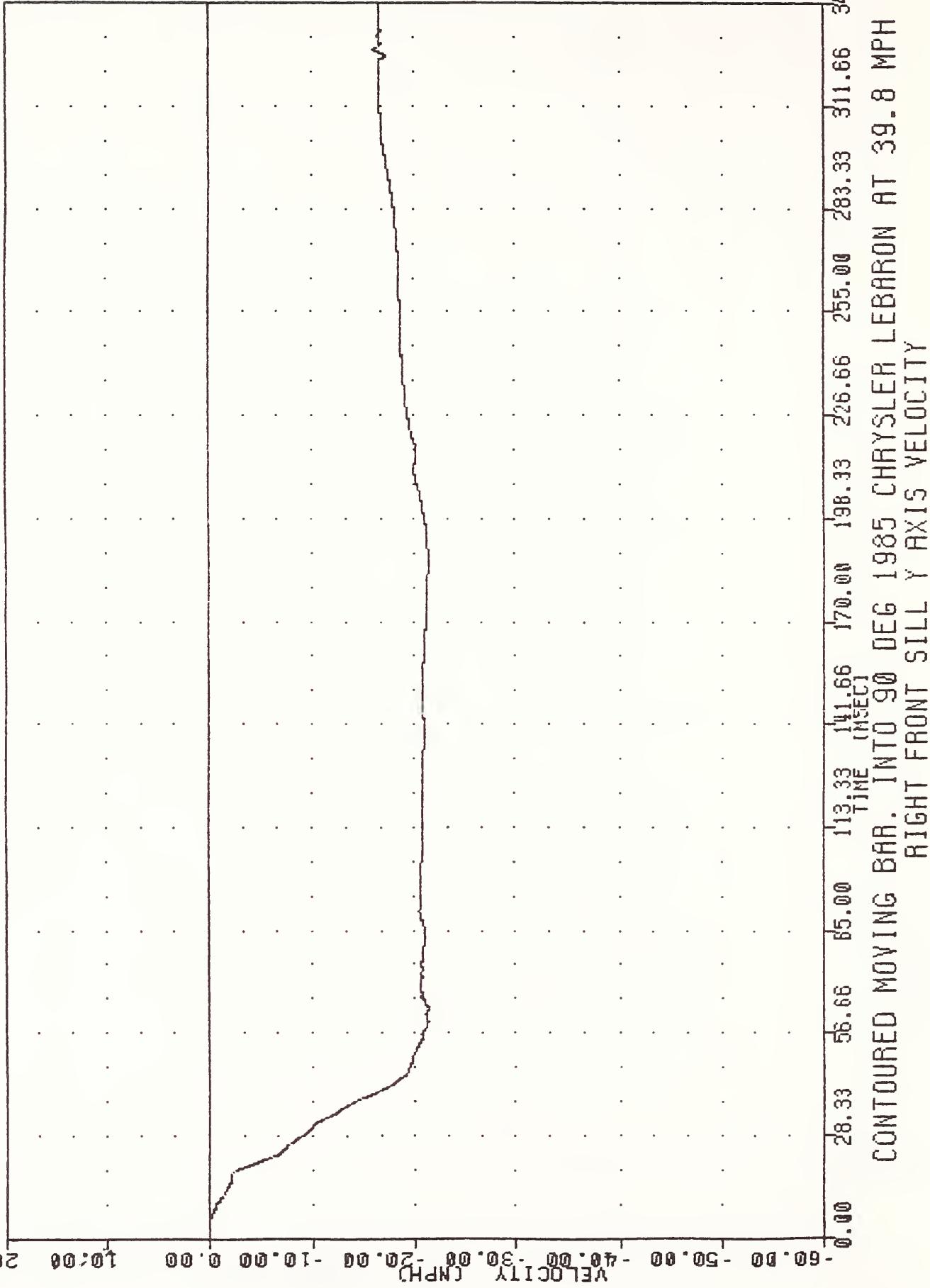
7.04 & 65.38



VRTC-4 890302-4
CRASH III DAMAGE ALGORITHM
89061
RF5IV

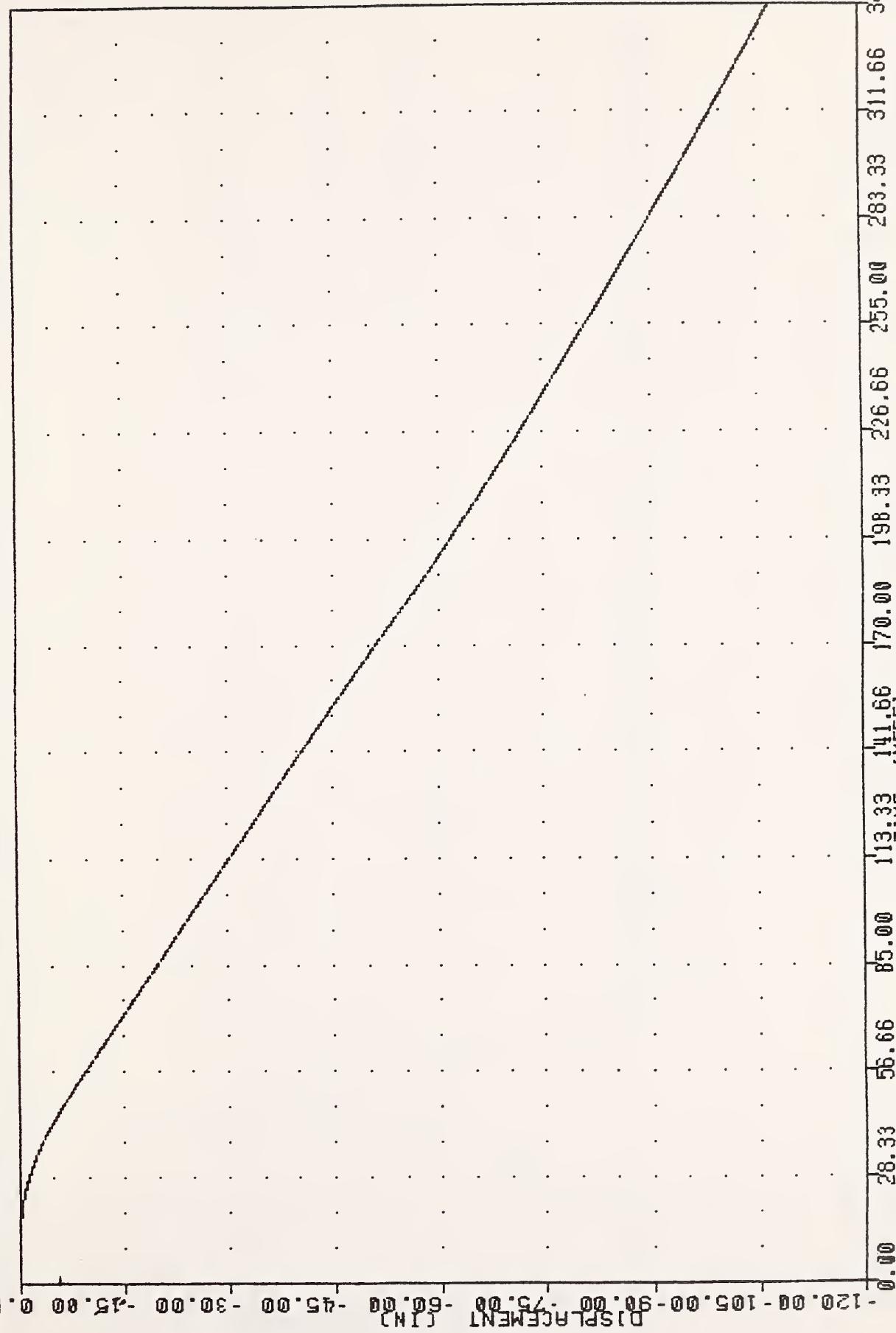
FILTER = ALFF 1650/ 5214/ -40
MIN, MAX VALUES = -21.448 63.000

0.00 8 2.75



YRTC-4
CRASH III DAMAGE ALGORITHM
89061
RFSND

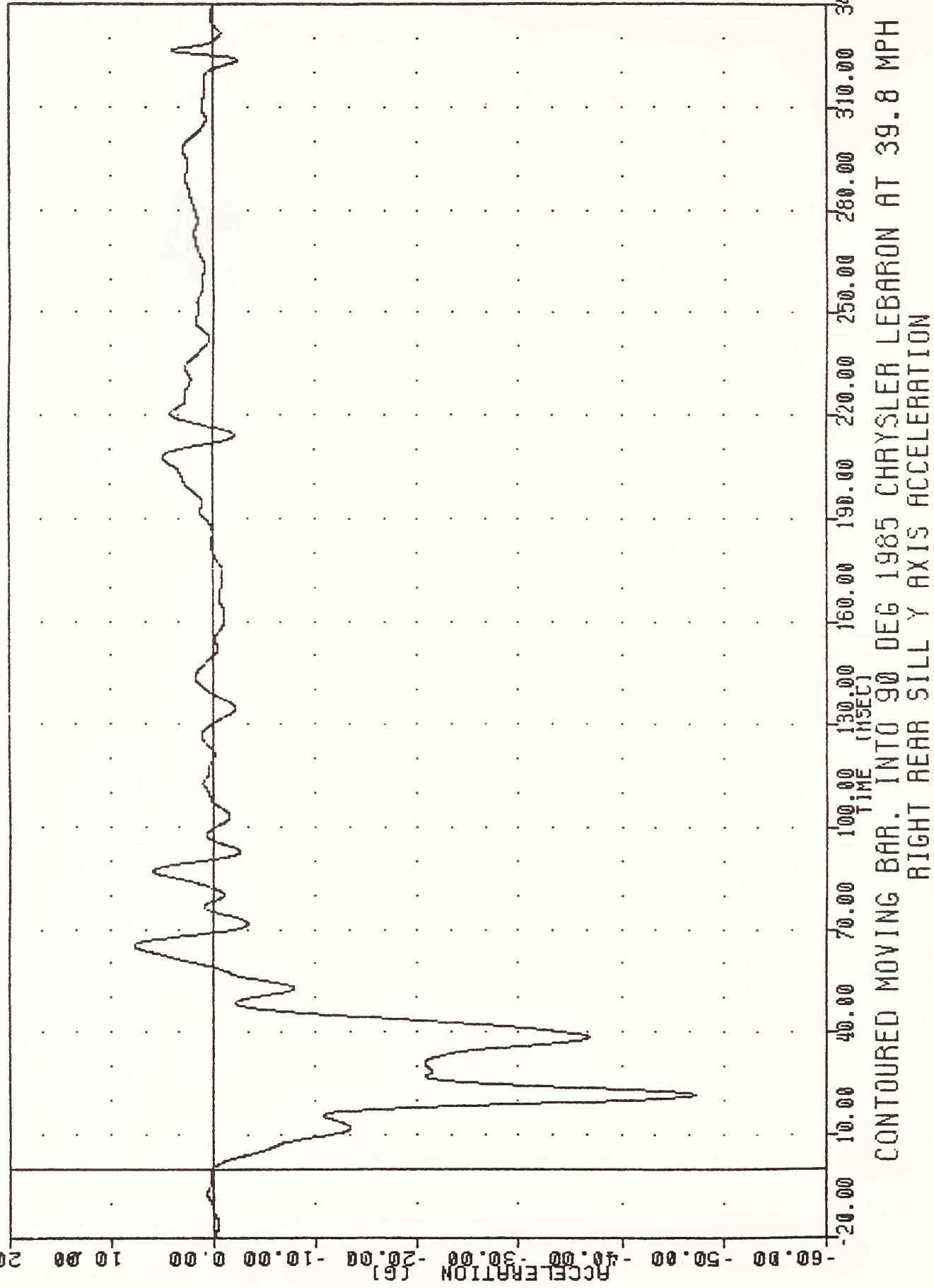
FILTER = HLPF 1650/ 5214/ -40
MIN, MAX VALUES = -107.08 & 340.00 ,
0.00 & 0.00



CONToured moving bar. INTO 90 DEG 1985 CHRYSLER LEBARON AT 39.8 MPH x4
RIGHT FRONT SILL Y AXIS DISPLACEMENT

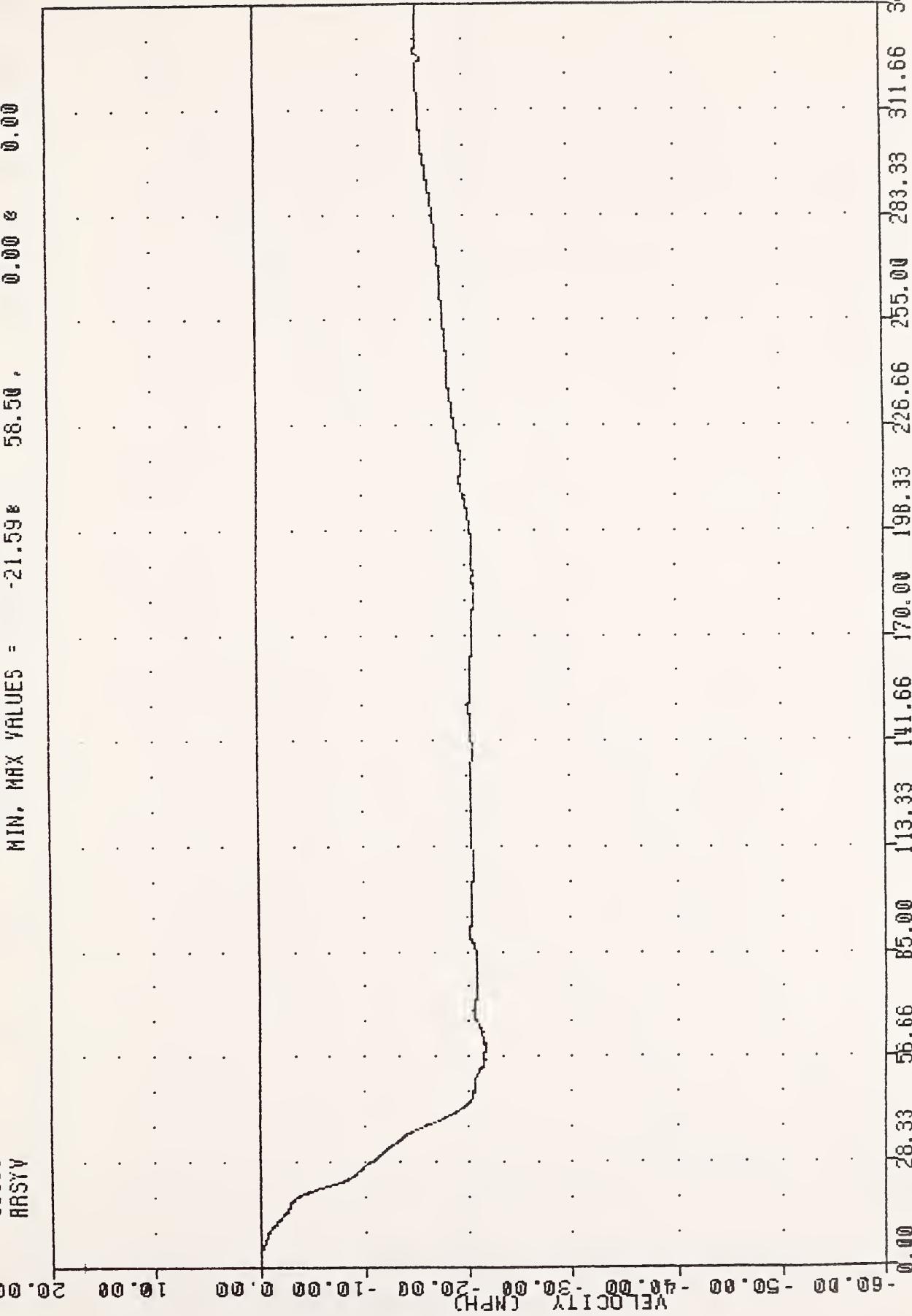
VRTC-4 890302-4
CRASH III DAMAGE ALGORITHM
89061
RFSY6

FILTER = BLPF 100/ 250/ -16
MIN, MAX VALUES = -47.288 21.637 7.728 65.25



VRTC-4
CRASH III DAMAGE ALGORITHM
39061
ARSTY

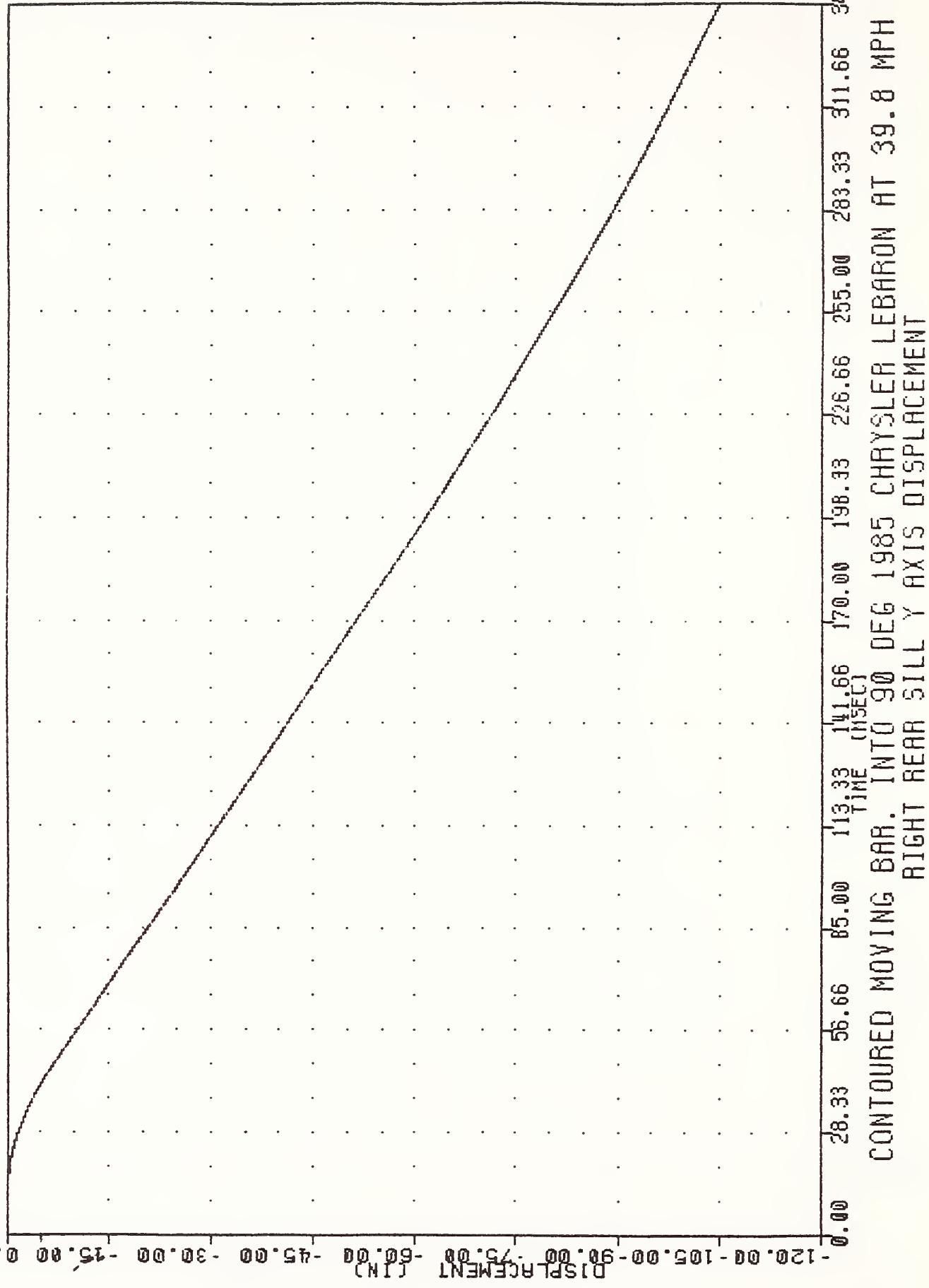
890302-4
FILTER = HLLF 1650/ 5214/-40
MIN, MAX VALUES = -21.598 58.501
0.00 0.00 0.00



340.00
311.66 283.33 255.00 226.66 198.33 170.00 141.66 113.33 85.00 56.66 28.33
0.00 60.00 50.00 40.00 30.00 20.00 10.00 0.00 -10.00 -20.00 -30.00 -40.00 -50.00 -60.00
TIME (msec)
VELOCITY (mph)
CONToured moving bar. into 90 deg 1985 CHRYSLER LEBARON AT 39.8 MPH x4
RIGHT REAR STILL Y AXIS VELOCITY

VRTC-4
CRASH IIII DAMAGE ALGORITHM
89061
ARSYD
00

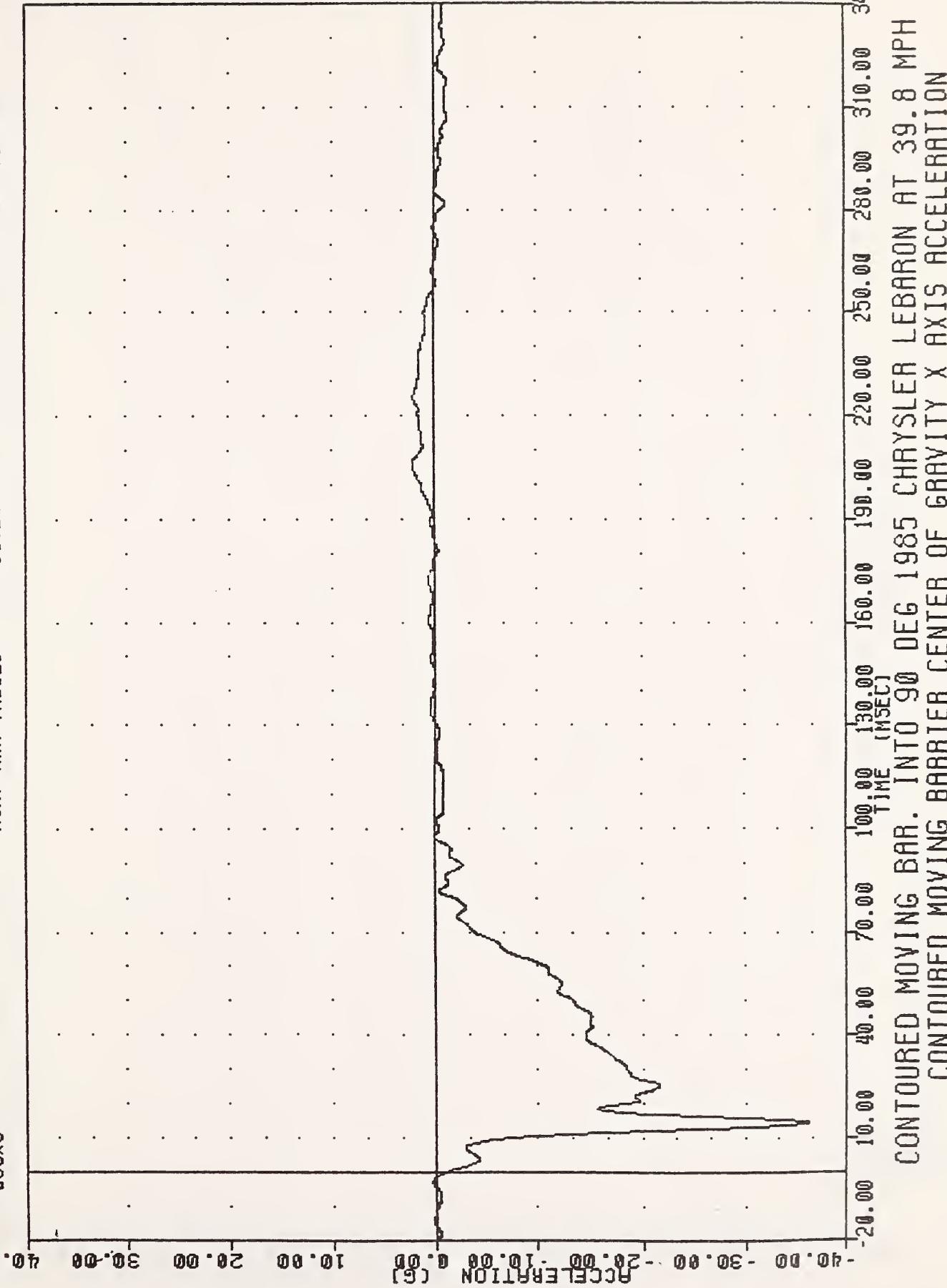
FILTER = ALPF 1650/ 5214/-40
MIN, MAX VALUES = -105.148 340.00 , 0.00 & 0.00



VRTC-4
CRASH III DAMAGE ALGORITHM
89061
8CGXG

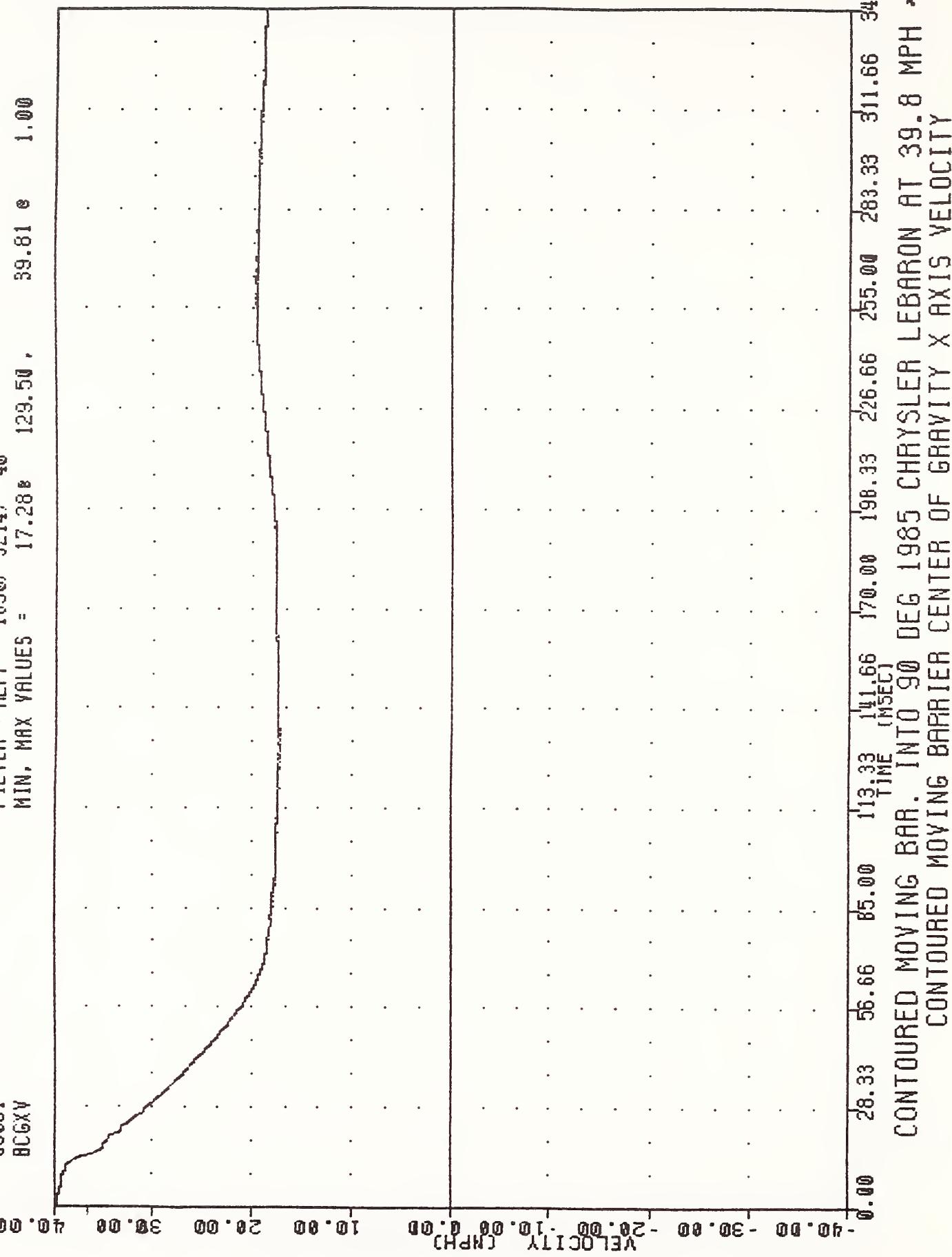
MIN. MAX VALUES = -36.288 14.50 , 2.26 & 205.25
FILTER = ELPP 100/ 250/ -16

00



VRTC-4 , 890302-4
CRASH III DAMAGE ALGORITHM
89061
BC6XV

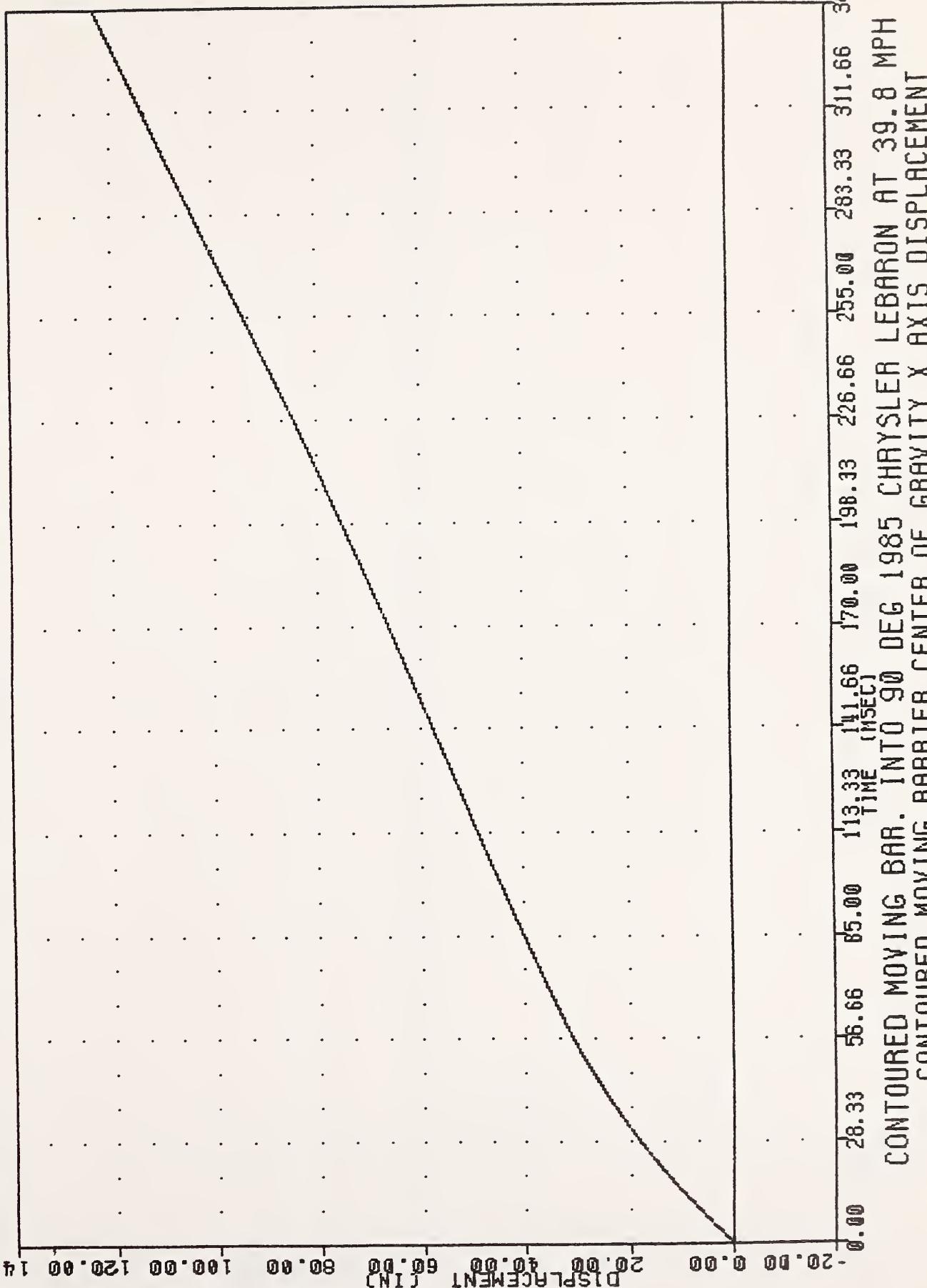
FILTER = HLPF 1650/ 524/ -40
MIN, MAX VALUES = 17.288 129.500 39.818 1.000



COUNTOURED MOVING BARRIER CENTER OF GRAVITY X AXIS VELOCITY

VRTC-4 8900302-4
CRASH III DAMAGE ALGORITHM
89061 BCGX0

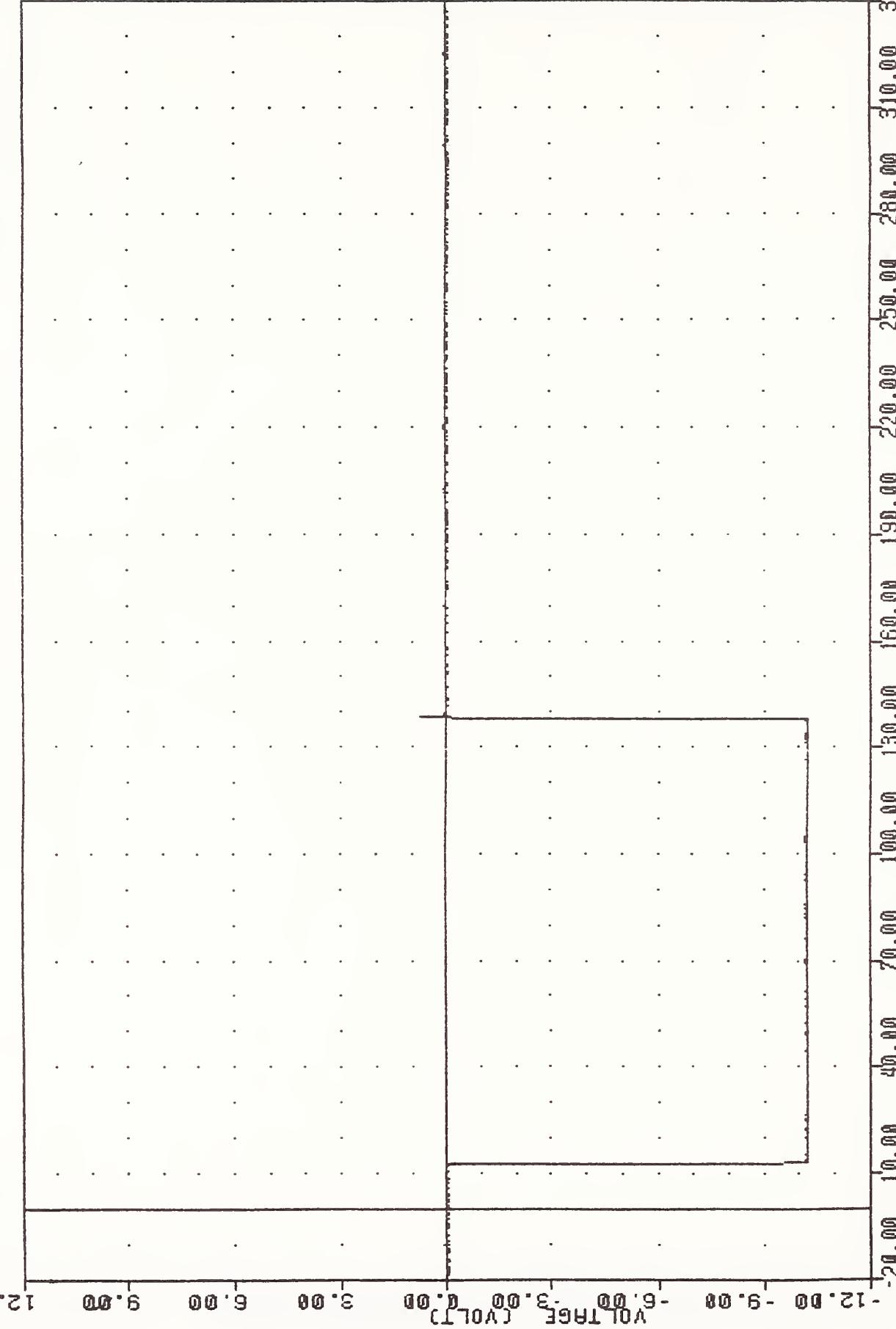
FILTER = FILPF 1650/ 5214/ -40
MIN, MAX VALUES = 0.00 & 0.00 . 123.00 & 340.00



CONToured moving bar. into 90 deg 1985 CHRYSLER LEBARON AT 39.8 MPH x4
CONToured moving barrier center of gravity x axis displacement

VRTC-4 , 890302-4
CRASH III DAMAGE ALGORITHM
89061 0TH1

FILTER = RLPP 1650/ 5214/ -40
MIN. MAX VALUES = -10.25E 13.00 , 0.78 E 138.38

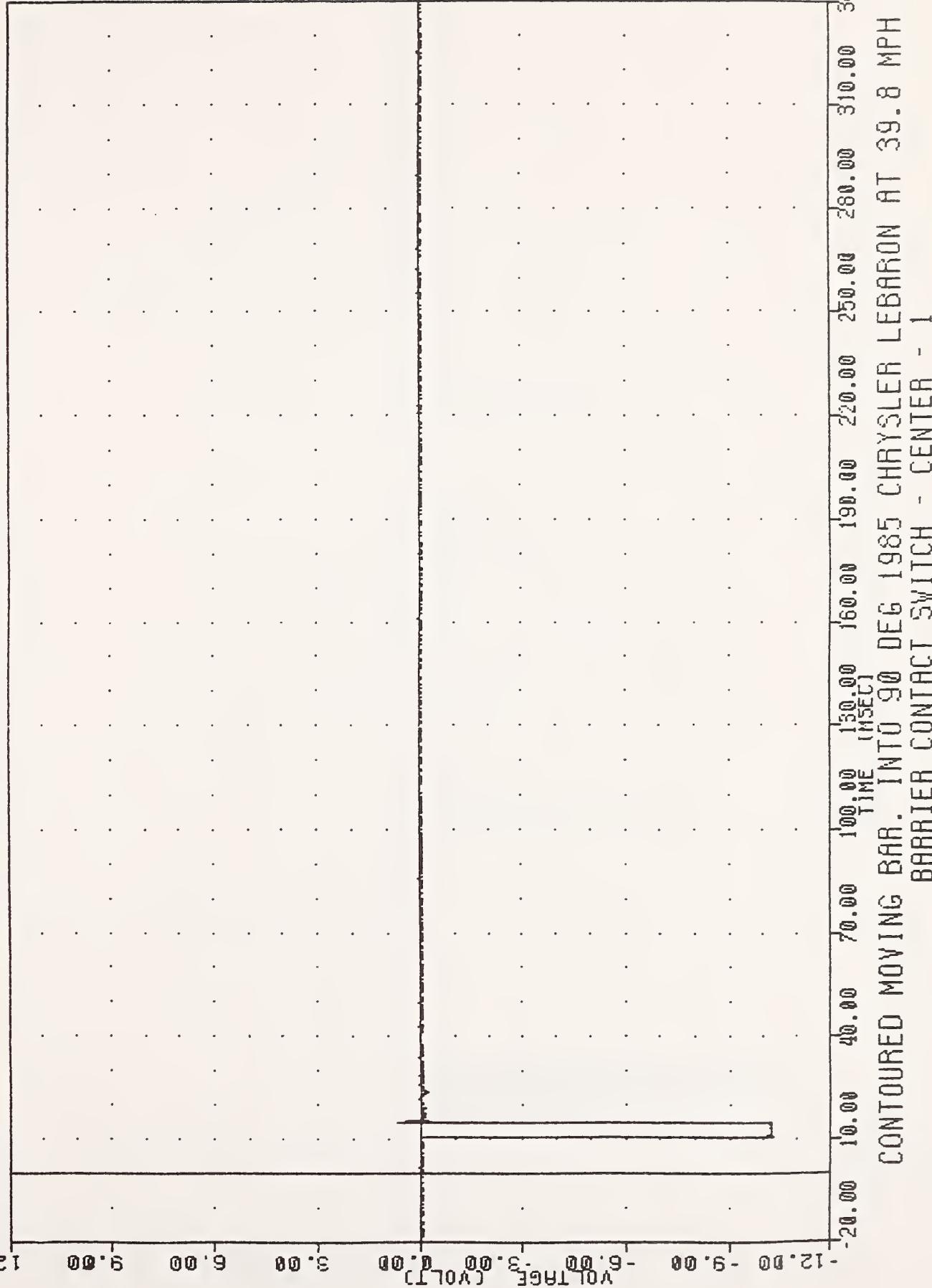


12.00 10.00 8.00 7.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
TIME (MSEC)
CONTOURED MOVING BAR. INTO 90 DEG 1985 CHRYSLER LEBARON AT 39.8 MPH #4
BARRIER CONTACT SWITCH - LEFT

BARRIER CONTACT SWITCH - LEFT

VTC-4 , 890302-4
CRASH III DAMAGE ALGORITHM
89061 0TH2

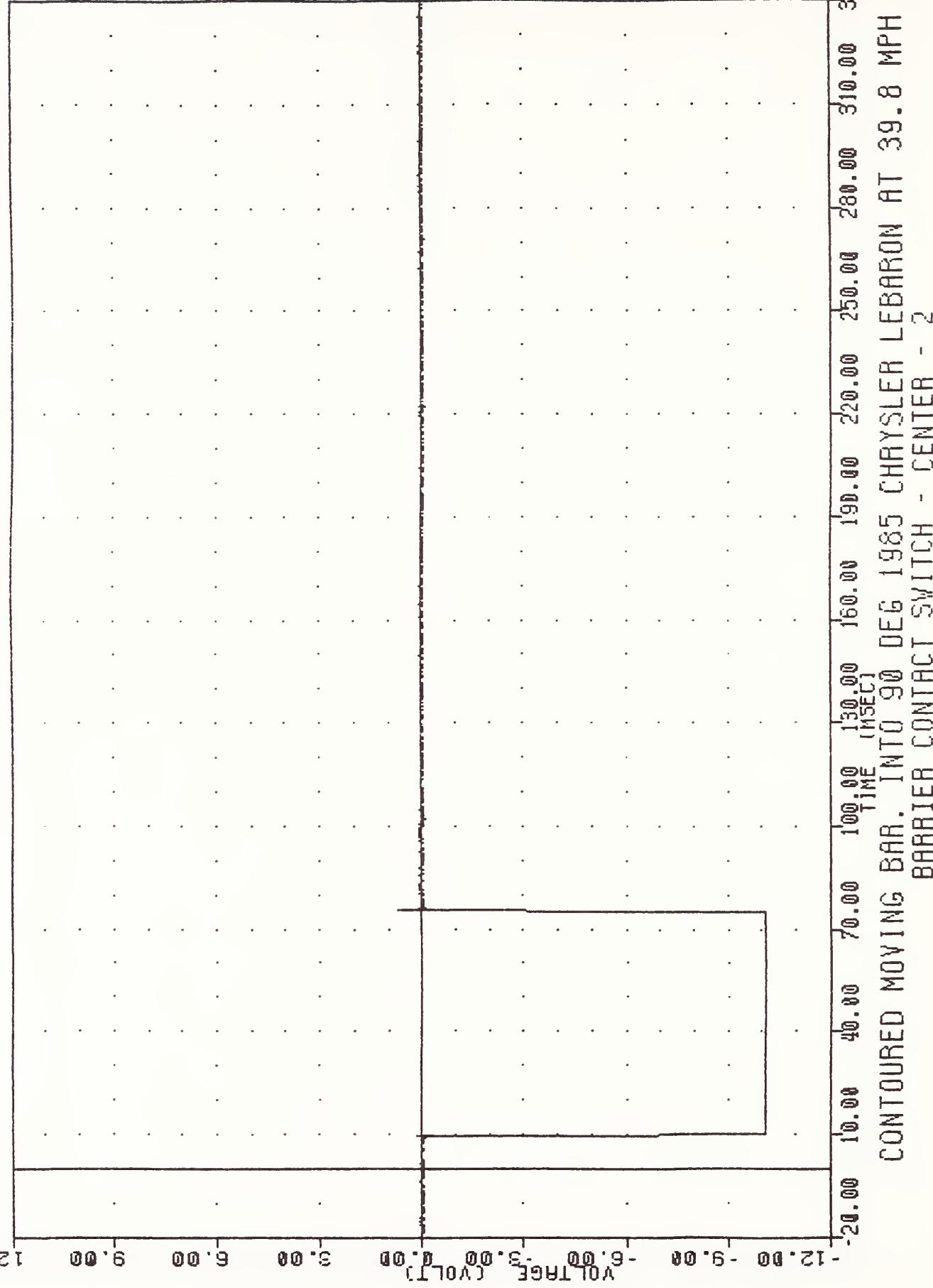
FILTER = ALFF 1650/ 5214/-40
MIN, MAX VALUES = -10.298 10.63 , 0.72 & 15.00



CONToured moving bar. into 90 deg 1985 Chrysler LeBaron at 39.8 MPH x4
BARRIER CONTACT SWITCH - CENTER - 1

VRTC-4
CRASH III DAMAGE ALGORITHM
89061
0TH3

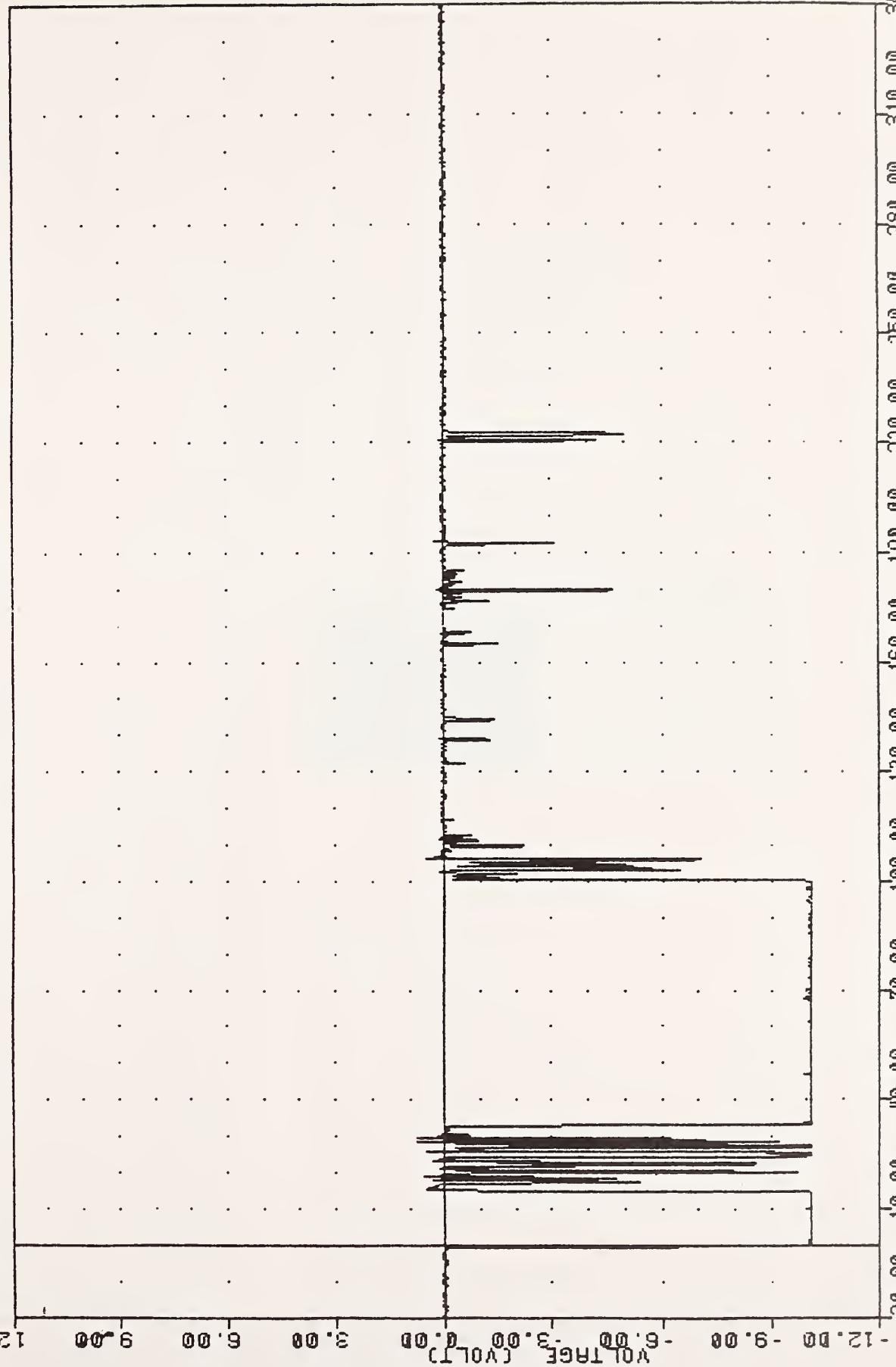
FILTER = ALPF 1650/ 5214/ -40
MIN, MAX VALUES = -10.088 9.88 , 0.73 & 75.50



CONToured moving bar. into 90 deg 1985 CHRYSLER LEBARON AT 39.8 MPH *4
BARRIER CONTACT SWITCH - CENTER - 2

VRTC-4, 890302-4
CRASH III DAMAGE ALGORITHM
89061
0TH4

FILTER = FILPF 1650/ 5214/ -40
MIN. MAX VALUES = -10.118 -0.13 , 0.80 & 29.63



CONToured moving bar. INTO 30 DEG 1985 CHRYSLER LEBARON AT 39.8 MPH x4
BARRIER CONTACT SWITCH - RIGHT

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Final report
cont'd

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